MARKHAMS

Farewell to

HVSBANDRY:

OR,

The Enriching of all sorts of Barren and Steril grounds in our Kingdome, to be as fruittull in all manner of Graine, Pulse, and Grasse, as the best grounds whatsoever.

Together with the annoyances, and preservation of all Graine and Seed, from one yeare to many yeares.

As also a Husbandly computation of men and Cattels daily labours, their expences, charges, and utmost profits.

The fourth time, revised, corrected, and amended, together with many new Additions, and cheape experiments:

For the bettering of arable Pasture, and wooddy Grounds. Of making good all grounds againe, spoiled with overflowing of salt water by Sea-breaches: as also, the Enriching of the Hop-garden; and many other things never published before.

LONDON,

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Jos: Banks

BRITISH MUSEUM

To the Right Worſhipfull, and his moſt worthy Friend, Mr. BONHAM NORTON, *Eſquire.*

Worthy Sir:

KNowledge which is the divine mother of certaine Goodneſſe, never came unwelcome to a knowing Iudgement; no more I hope ſhall this my labour to your worthy Selfe, ſince doubtleſſe you ſhall finde in it many things New ſomething neceſſary, and nothing which hath not in it ſome particular touch of profit: It is a worke your former incouragements to my other labours did create in mee; and the wants you worthily found, I hope ſhall bring you ſupplies both wholeſome and becomming. The experience I aſſure your Goodneſſe, was the expence of a bitter and tedious Winter, but the contentment (in gaining my wiſh) made it more pleaſant than all the three other Seaſons.

What ever it be, it comes to you full of love, full of service: And since I know Vertue measureth all things by its owne goodnesse; it is enough to me, that I know you are that Vertue. In you is power to judge, in you is Authority to exercise Mercie, let them both flie from your Goodnesse with that mildnesse, that in them my hopes may be crowned, and my selfe rest ever at your service,

Gervase Markham.

The Preface to the *Reader.*

Shewing the use, profit, and truth of the Worke.

THe use and application of this Worke (gentle Reader) is to reduce the hard barren and steril grounds, such as were never fruitfull, or such as have beene fruitfull and are made barren by ill Husbandry, to be generally as fruitfull as any ground whatsoever; from whence shall ensue these generall profits.

First, plenty of Corne and Pulse, because all grounds being made able and apt for tillage, the Kingdome may afford to sow for one bushell that is now, hereafter five hundred, so mighty great are the unfruitfull wastes of Heaths, Downes, Mores, and such like, which at this day lie unprofitably, and to this abundance of Corne will arise an equall abundance of Grasse and Pasture, for as the best ground of the worst, is to be converted to Pasture, and the worst to Tillage, so that worst being tilled and drest, when it hath done bearing of Corne, (which will be in sixe or seven yeares) shall for as many yeeres more beare as good Pasture either for breeding or feeding, as can be required, and then being newly drest againe, shall newly flourish in its first profit.

Secondly, whereas in fruitfull places the third or fourth part of al arable ground is lost in the fallow or

tilth ground, now in these barren grounds you shall keepe no fallow field at all, but all shall beare either Corne or Grasse, that fallow part serving to pay for the charge bestowed on it and the rest.

Lastly, wheras in fertill grounds you cannot have either Wheate, Barley, or Rye, under two, three, foure, five, and sometimes sixe severall plowings, as fallowing in *January* and *February*, Stirring in *Aprill* and *May*, Foiling in *July* and *August*, Winter-ridging in *October* and *November*, and sowing with other Ardors; now in these hard grounds restored you shall not plow above twice at the most, to the saving of the Husband-mans paines, his Cattels travell, and a larger limitation of time for other necessary businesses.

For the truth of the Worke, hee that will ride into the barren parts of *Devonshire* or *Cornewall*, into the mountainous parts of *Wales*, into the hard parts of *Middlesex* or *Darby-shire*, or into the cold parts of *Northumberland*, *Cumberland*, *Westmoreland*, *Lancashire*, or *Cheshire*, shall finde where industry is used, a full satisfaction for all that is here written. Farewell.

Thine *G. M.*

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An excellent way to take Moles, and to preserve good Grounds from such annoyance.

PUt Garlike, Onyons, or Leekes, into the mouthes of the holes, and they will come out quickely as amazed.

MARKHAM,
HIS
Farewell to Husbandry.

CHAP. I.

The nature of Grounds in generall; But particularly of the barren and sterile earth.

TO come to the full effect of my purpose without any preambulation, or satisfaction to the curious, for to the honestly vertuous are all mine endevours directed: you shall understand that it is meet that every Husbandman be skilfull in the true knowledge of the natures of Grounds; as which is fruitfull, which not: of which, in my first Bookes I have written sufficiently; nor doe I in this booke intend to write any tittle that is in them contained; for as I love not *Tautologie*, so I deadly hate to wrong my friend.

Grounds then, as I have formerly written in my first Books, being simple or compounded; as simple Clays, Sands or Gravels together; may be all good, and all fit to bring forth increase, or all evill and barren, and unfit for profit: for every earth, whether it be simple or compounded, whether of it selfe or of double

mixture, doth participate wholly with the clyme wherein it lyeth; and as that is more hot, or more cold, more moyst, or more dry; so is the earth ever more or lesse fruitfull: yet for the better understanding of the plaine Countrey-man, you shall know that both the fruitfull and unfruitfull ground have their severall faces and characters whereby they be as well knowne as by the clime or situation of the continent; for that ground which though it beare not any extraordinary abundance of grasse, yet will load it selfe with strong and lusty weeds, as Hemblocks, Docks, Mallowes, Nettles, Ketlockes, and such like, is undoubtedly a most rich and fruitfull ground for any graine whatsoever. Also, that ground which beareth Reed, Rushes, Clover, Daisie, and such like, is ever fruitfull in grasse and Herbage, so that small cost and lesse labour in such grounds, will ever make good the profit of the Husband-man: but with these rich grounds at this time I have nothing to doe.

Knowledge of barren grounds.

To come downe then to the barren and unwholesome grounds, you shall understand that they are to be knowne three severall waies; first, by the clyme and continent wherein they lie; next, by their constitution and condition; and lastly, by outward faces and characters. By the clyme and continent, as when the ground lies farre remote from the Sunne, or when it lies mountainous and high, stony and rocky; or so neere unto the skirts and borders of the Sea, that the continuall Fogges, Stormes, Mysts, and ill Vapours arising from thence, doe poyson and starve the earth: all which are most apparant signes of barrennesse. By the constitution and condition, as when the ground is either too extreamely cold and moyst, or else too violently hot & dry; either of which produceth much

hardneſſe to bring forth, and ſheweth the earth ſo lying, to be good for little or no profit. By the outward faces and characters, as when you ſee (in ſtead of Graſſe, which would be greene, flowry, and thicke growing) a pale thinne moſſie ſubſtance cover the earth, as moſt commonly is upon all high Plaines, Heathes, Downes, and ſuch like: or when you ſee the ground covered with Heath, Lyng, Broome, Braken, Gorſe, or ſuch like, they be moſt apparent ſignes of infinite great barrenneſſe, as may bee ſeene in many Mores, Forreſts, and other wilde and woody places. And of theſe unfertile places, you ſhall underſtand that it is the clay ground, which for the moſt part brings forth the Moſſe, the Broome, the Gorſe, and ſuch like: the Sand, which bringeth forth Brakes, Lyng, Heath; and the mixt earth, which utters Whinnes, Briars, and a world of ſuch like unnaturall and baſtardly Iſſues.

Thus having a true knowledge of the nature and condition of your ground, you ſhall then proceed to the ordering, earing, and dreſſing of the ſame, whereby it may not onely be purged and cleanſed from thoſe faults which hindred the increaſe thereof, but alſo ſo much bettered and refined, that the beſt ground may not boaſt of more ample increaſe, nor your more fruitfull placed neighbours exceed you in any thing, more then in a little eaſe.

CHAP. 2.

Of the Ordering, Tilling, and Dressing of all sorts of plaine barren Clayes, whether they be simple or compounded.

THou whom it hath pleased God to place upon a barren and hard soile, whose bread must evermore be grounded with sweat and labour, that mayest nobly and victoriously boast the conquest of the Earth, having conquered Nature by altering Nature, and yet made Nature better than shee was before: thou I say, that takest this honest delight in goodnesse, hearken unto these following Precepts.

The first enriching of barren grounds.

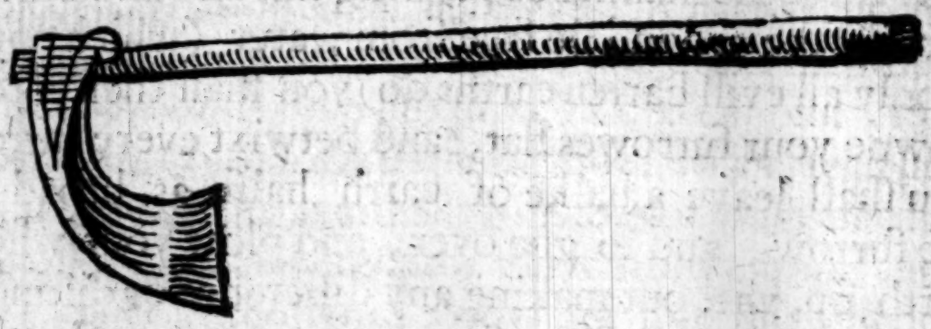
As soone as thou hast well pondered and considered the nature of thy ground, and dost finde that it is altogether barren and unfruitfull, the clime and condition nor suffering it to bring forth any thing of worth or profit, and that thou hast well weighed what manner of earth it is, as that namely it is either a simple Clay, or a Clay so mixt with other earths, that yet notwithstanding the Clay is still most predominant, thou shalt then select or choose out of this earth so much as to thy selfe shall seeme convenient, it being answerable to the strength of thy Teame, and the ability of thy purse and labour to compasse; and this earth so chosen out, thou shalt about the beginning of *May* in a faire season, breake up with a strong Plough, such as is generally used in all strong Clay grounds, the share being rather long then broad, and the Colture rather somewhat bending then straight and even, accoreing as the nature of the ground shall require, which every simple Plough-man will soone finde out in turning up two or three furrowes; for according to the cutting of the earth

earth so must the Husbandman fashion the temper of the plough.

Now for the manner of plowing this bad and barren earth, if the ground lie free from water (which commonly all evill barren earths do) you shall then throw downe your furrowes flat, and betwixt every furrow you shall leave a balke of earth halfe as broad as the furrow, and so goe over, and plow your whole earth up, without making any difference or distinction of lands: but if you feare any anoyance of water, then you shall lay your furrowes more high, neere, and close together, dividing the ground into severall lands and proportioning every land to lie the highest in the midst, so that the water may have a descent or passage on either side. The manner of plowing.

Now so soone as you have thus plowed up your land and turned all the swarth inward unto the earth, you shall then take hacks of yron, well steeled and reasonable sharpe, such a cõpetent number, as or your purse or power can compasse, or the greatnesse of your ground requireth, for you shall understand that one good hacker, being a lusty labourer, will at good ease hacke or cut more than halfe an Acre of ground in a day; and with these hackes you shall hew and cut to pieces, all the earth formerly plowed up, furrow by furrow, and not the furrowes onely, but also each severall balke that was left betweene, & any other greene swarth whatsoever the plow had escaped, and it shall bee cut into small pieces as conveniently you can; for thereby is your mould made much more mellow and plentifull, and your seed at such time as it is to be cast into the earth, a great deale the better and safer covered, and much more sooner made to sprout and bring forth increase. Now for Hacking of ground.

the ſhape and faſhion of theſe Hacks, you ſhall behold it in this Figure.



When you have thus hacked all your ground, and broke in pieces all hard cruſts and roughneſſe of the ſwarth, you ſhall then immediately, with all the convenient ſpeed you can (becauſe time is very precious in theſe labours) if you be neere unto any part of the Sea-coaſt, or to any other creeke or river, where the ſalt water hath a continuall recourſe, thence fetch (either on horſe-backe, or in cart, or other Tumbrill, ſuch as the nature of the Country, or your owne eaſe can afford) great ſtore of the ſalt ſand, and with it cover your ground which hath beene formerly plowed and hackt, allowing unto every acre of ground, threeſcore or foureſcore full buſhels of ſand, which is a very good and competent proportion; and this ſand thus laid, ſhall be very well ſpread and mixed among the other hackt and broken earth. And herein it is to be noted, that not any other ſand but the ſalt is good or availeable for this purpoſe, becauſe it is the brine and ſaltneſſe of the ſame which breedeth this fertility and fruitfulneſſe in the earth, choaking the growth of all weedes and bad things, which would ſpout from the earth, and giving ſtrength, vigour, and comfort to all kind of graine or pulſe, or any fruit of better nature.

Standing of ground.

Salt ſand

When you have thus ſanded your earth, you ſhall then

then if you have any Limeſtone about your grounds (as barren earth are ſeldome without) or if you have any quarries of ſtone (which are ſeldome unaccompanied with Lime-ſtone) gather ſuch Lime-ſtone together, and make a kilne in the moſt convenient place you have, as well for the carriage of the Lime, as for the gathering together of the ſtone, and having burnt your Lime, the manner whereof is ſo generally well knowne through the whole Kingdome, that in this place it needeth little or no repetition; you ſhall then on every Acre ſo formerly plowed, hackt, and ſanded, beſtow at leaſt forty, or fifty buſhels of Lime, ſpreading and mixing it exceedingly well with the other ſand and earth; and herein is to be noted, that the ſtronger and ſharper the Lime is, the better the earth will be made thereby, and the greater increaſe and profit will iſſue from the ſame; neither ſhall you need to reſpect the colour and complexion of the Lime, as whether it be purely white (as that which is made from Chalke) or gray (as that which is made from the ſmall Limeſtone) or elſe blackiſh browne (as that which is made from the great ſtone and maine Quarry) ſince it is the ſtrength and goodneſſe of the Lime, not the beauty and colour which brings forth the profits. Liming of ground.

Now that this Lime is of excellent uſe and wonderfull profit, doe but behold almoſt all the Countries of the Kingdome where there is any barrenneſſe, and you ſhall finde and ſee how frequently Lime is uſed, in ſo much that of mine owne knowledge in ſome Countries where (in times paſt) there was no Buſhell made or uſed, there is now many loads, and all riſen from the profitable experience which men have found in the ſame. lime

Meanuring of ground.

Now, when you have thus limed your ground, you ſhall then take of the beſt meanure you have, as Oxe, Cowe, or Horſe-dung, Straw-rotted, either by the littering of Beaſts, or by caſting upon High-waies; the mudde of Lakes, Pondes or Ditches; the ſoyle of young Cattell made in the Winter time by feeding at ſtand Heakes, or any ſuch like kinde of Ordure; and this meanure or compaſſe, you ſhall carry forth either on horſe-backe, or in Carts or Tumbrels (according as the Countrey will afford) and you ſhall lay it and ſpread it upon your ground ſo formerly plowed, hackt, ſanded, and lymed, in very plentifull manner, ſo farre forth as your proviſion will extend: for it is to be underſtood, that barren and hard earths can never be over-laded with good meanure or compaſſe, ſince it is onely the want of warmth and fatneſſe which meanure breedeth, and cauſeth all manner of fruitfulneſſe.

Time for all abours.

After you have thus meanured all your ground, it is to be ſuppoſed that the ſeaſon of the yeere will be well ſhot on, for the labour of ſanding will take little leſſe than two moneths, your ground being of any indifferent great quantity, except you have the aſſiſtance and helpe of many of your friends, which is a courteſie that every Husbandman may imbrace, but not truſt unto; for I would not wiſh any man that hath not Tenants to command, to preſume on other friends, leſt they faile him, and ſo his worke lie halfe done, and halfe undone, which is a great Character of negligence and improvidence: but let every one proportion their labours according to their owne ſtrengths, and the number of their ordinary families. The lyming of your ground will take at leaſt halfe ſo much time as the ſanding; and the

the meanuring rather more then lesse then the lyming; so that by reasonable computation of time, beginning to plow your ground at the beginning of *May*, ere it bee hackt, sanded, lymed, and meanured, *Michaelmas* will be come, which is the end of *September*: for I allow the moneth of *May* to plowing and hacking; *Iune* and *Iuly*, for sanding; *August* for lyming; and *September*, for meanuring. So then to proceed on with your labour, at *Michaelmas*, or from that time to the end of *October*, you shall beginne to plow over that ground againe which formerly you had plowed, hackt, sanded, lymed, and meanured; and at this latter plowing, you shall plow the ground somewhat deeper than you did before, and taking a good stitch (as they call it in Husbandry) you shall be sure to raise up the quicke earth, which had not beene stirred up with the plow before, making your furrowes greater and deeper than formerly they were, and laying them closer and rounder together than they were before; and in this order or later earing, you shall be carefull to plow your ground as cleane as you can, without baukes and other escapes in Husbandry; and as you plow your ground, you shall have certaine Hackers, with their hackes, to follow the Plow, and to cut the earth and furrowes into very small pieces, as was formerly shewed in the hacking and cutting of the first ardor: then so soone as your ground is thus plowed and hackt, you shall take a paire or two of very strong and good yron harrowes, and with them you shall goe over your ground, tearing that which was formerly plowed and hackt into more smaller peeces than before, & raising up the mould in much greater abundance than was formerly seene: which worke once finished, you shall then

Second plowing.

Second hacking.

First harrowing.

then take your ſeed which would be the fineſt, cleanest, and beſt Wheate you can provide, and after the manner of good Husbandry, you ſhall ſowe it on the ground very plentifully, not ſtarving the ground for want of ſeed (which were a tyrannous penury) nor yet choking it with too much (which is as laviſh a foolery) but giving it the full due, leave it to the earth & Gods bleſſing.

Of ſowing the ſeed.

Now ſo ſoone as you have thus ſowen your ſeede, forthwith you ſhall take all the Harrows againe, harrowing the ſeed into the earth, and covering it cloſe and well with all care and diligence; and in this latter harrowing, you ſhall have great reſpect to breake every clot as much as you can, and ſo ſtirre up and make as much mould as you can, and the finer ſuch mould is made, the better it is, ſo it cover deepe and cloſe; for you ſhall underſtand, that all theſe kind of barren Clayes, are naturally tough, cold, and binding, whereby they ſtifle and choke any thing that growes within them; for the naturall toughneſſe of the earth will not give any thing leave to ſprout, or if it doe ſprout, the binding nature thereof, ſo fetters and locks it within the mould, that it cannot iſſue out, or if it doe (with extreame ſtrugling) riſe through the pores of the ſame, yet doth the cold preſently ſtarve the roote and make the ſtemme utterly unable to bring forth fruit, or any profit at all, ſo that except the toughneſſe bee converted to a gentle looſeneſſe and eaſie dividing of it ſelfe, the coldneſſe unto warmth, and the hard binding unto a ſoft liberty, there can be ſmall hope of commidity which this manner of dreſſing the earth bringeth to paſſe; for the mixture of the ſand, takes away the toughneſſe; the Lime brings heate, and the meanure comfort and liberty: as for

The ſecond harrowing.

y nature of Barren Clays

Faults in the earth.

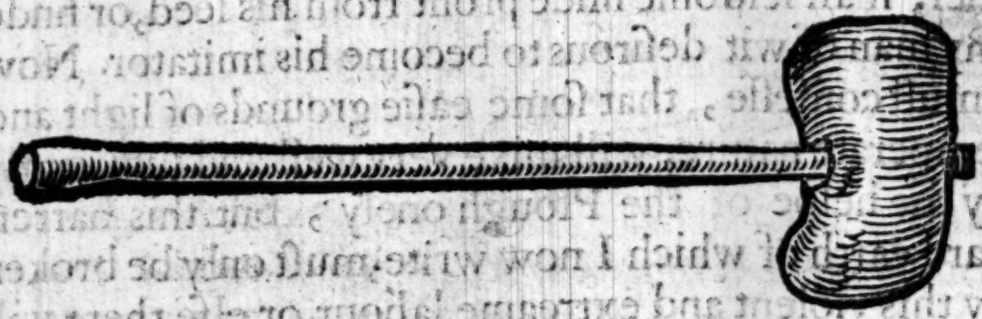
for the hacking and cutting the earth, that is to make all the reſt ſimbolize and mixe together; for as if any Diſpenſatory, make a medicine, and caſt his ingredians confuſedly one upon another, without care of mixture, melting or diſſolution, ſhall finde but a corrupt, diſorderly, and ill compounded receipt; ſo he that dreſſeth and manureth his ground, and doth not by hacking, plowing, or ſome other husbandry, courſe mixe the earth and the compaſſe perfectly well together, ſhall ſeldome finde profit from his ſeed, or finde any man of wit deſirous to become his imitator. Now I muſt confeſſe, that ſome eaſie grounds of light and temperate nature, will mixe very well and ſufficiently by the helpe of the Plough onely; but this barren hard earth of which I now write, muſt only be broken by this violent and extreame labour, or elſe there will neither be mold, earth, nor any other coverture for the ſeed, but onely foule, great and diſorderly clots and lumps, through which the graine can never paſſe, and that which lieth uncovered will bee made a prey to fowle and other vermine which will hourely deſtroy it.

After you have ſowen and harrowed the ground, you ſhall then ſee if there remaine any clots or hard lumps of earth unbroken, which the teeth of the Harrows are not able to teare in pieces (as it is very likely you ſhall perceive many) for theſe hard barren earths which are plowed up in their greene ſwarthes, are nothing neere ſo eaſily broken and brought to mould, as are the mellow ſoft earths which have beene formerly plowed many times before, becauſe the hard and intricate rootes of the Graſſe, Moſſe, and other quicke ſubſtances growing upon the ſame doth binde and hold the mould ſo cloſe and faſt together, beſides the natu-

Of clotting ground.

rall

rall ſtrength and hardneſſe of the earth, that without much induſtrious and painefull labour, it is impoſſible to bring it to that fineneſſe of mould which Art and good Husbandry requireth, therefore, as ſoone as you behold thoſe clots and lumps to lie undiſſevered and unbroken, you ſhall forthwith take good ſtrong clotting beetles, or maules made of hard and very ſound wood according to this proportion of this figure.



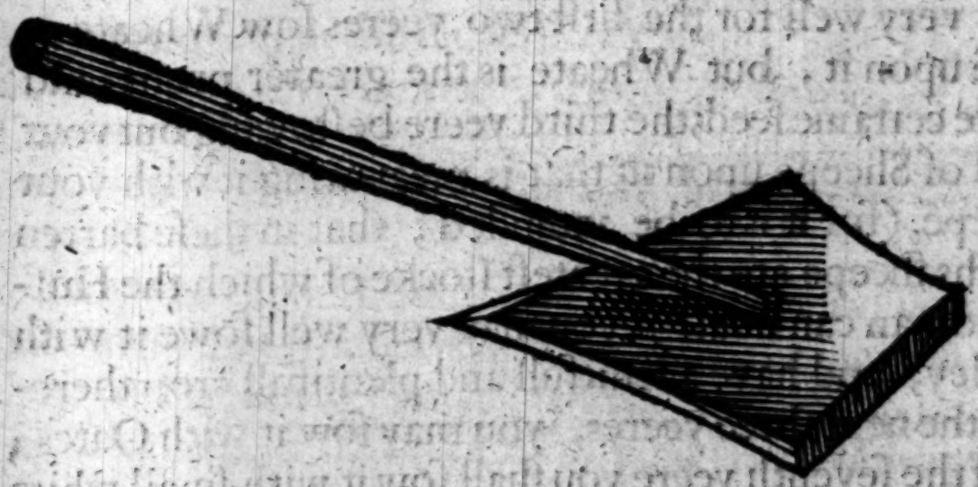
And with theſe maules or clotting beetles, you ſhall breake all the hard clots and lumpes of earth in pieces even to ſo ſmall duſt, as poſſibly you can; becauſe you are to preſuppoſe, that theſe clots thus hard, tough, & unwilling to be with any meanes digeſted into mould, are either not at all, or elſe very inſufficiently mixed with the Sand, Lime and other meanures: and therfore you muſt rather breake them, that thereby they may mixe, and give eaſie paſſage to the graine, and not like heavie poyſes and dead lumps lie and preſſe down the ſeed ſo that it cannot ſprout.

Another manner of clotting.

But if it ſo fall out that partly by the hardneſſe of the ill earth, partly through the ſeaſon and dryneſſe of the yeere, that theſe clots and lumps of earth will either not be broken at all, or at leaſt ſo inſufficiently that the mould will not be any thing neere ſo fine as you would have it; you ſhal then having done your beſt endevour,

let

let your ground reſt till there have falne a good ground ſhower or two of raine, which may wet the clots through and through; and then the next faire blaſt, you ſhal take your clotting beetles, but not thoſe which you tocke before in the dry ſeaſon, but ſome much lighter, broader and flatter, being made of thick Aſh-boords more then a foot ſquare, and above two inches in thickneſſe, according to this figure.



And with theſe flat maules and beetles, you ſhall breake all the unbroken clots & lumps of earth which ſhall trouble or annoy your ground, making your lands as plaine and ſmooth as is poſſible, ſo that the graine may have eaſie paſſage forth; which labour as ſoone as you have finiſhed, you ſhall then referre the increaſe and proſperity thereof unto the mercies of God, who no doubt will give his bleſſings according to thy labour and thankfulneſſe.

As touching the trimming & weeding of this Corn, after it is ſprung a foote above the earth, or thereabouts, you ſhall underſtand, that theſe hard barren grounds are very ſeldome troubled with weeds; for weeds, eſpecially great, ſtrong, and offenſive weeds are the iſſues of rich and fertile ſoyles; yet, if through the trim- Of weeding.

trimming and making of this earth (which is not commonly ſeene) you doe perceive any ſtore of thyſtles, or other groſſer weeds to ſpring up, you ſhall then in the moneth of *May*, with hookes, nippers, and ſuch like tooles, cut them away or pull them up by the roots, which indeed is the better manner of weeding.

Severall ſeeds ſeverall yeares

Now here is to be underſtood, that your ground being thus dreſſed and trimmed as is before ſhewed, you may very well for the firſt two yeeres ſow Wheate or Rye upon it, but Wheate is the greater profit and more certaine ſeed; the third yeere beſtowing but your fold of Sheepe upon it; that is, meanuring it with your ſheepe, (for it is to be intended, that in theſe barren earths ſheepe are the greateſt ſtocke of which the Husbandman can boaſt) you may very well ſowe it with Barley, and have a fruitfull and plentifull crop thereon; the next three yeeres, you may ſow it with Oates; and the ſeventh yeere you ſhall ſow it with ſmall white Garden-peaſe or beanes, according as you ſhall finde the ſtrength and goodneſſe of the ground; (for Beanes deſire ſomewhat a richer ſoyle than the Peaſe) then for three or foure yeeres following the ſeven, you may let it lie at reſt for graſſe, and doubtleſſe it will yeeld you either as good Paſture, or as good Medow as you can reaſonably require. And then after the expence of this time, it ſhall be good that you dreſſe & order your ground againe in ſuch ſort as was formerly declared; and thus you may every yeere dreſſe one or other piece of ground, till you have gone over all your ground, or at leaſt as much as you ſhall thinke expedient: and without faile, hee that is Maſter of the moſt fruitfulleſt and richeſt ſoyle, ſhall not boaſt of any greater increaſe then you ſhall, onely your charge

may

may be a little more, and so shall bee also your commodity, which shall make an amends for your charge; as for your toyles, yours shall be much the lesse, by a just computation; for though you have many labours, yet they are but summer-labours, and neither hurt your owne body, nor your Cattell: wherea the Master of the rich soile is in continuall work both Winter and Summer, labouring twice so much to confound the superfluous growth of weedes as you doe to beget the increase of Corne; and whereas hee must ever keepe a third or fourth of his Corne-ground without fruite, you shall not keepe any which shall not yeeld you a sufficient commodity.

Now me thinks I heare in this place, to be objected unto mee, that whereas I doe prescribe the sanding of these barren earths with the salt sea-sand, and no other (as it is true, for all other fresh sand is unavaileable) what if the ground doe lie so far within the Land, that there is no salt sand within many score miles of it, how then shall I make good my barren earth; sure to fetch sand so farre, will never equall the cost, or it may bee this experience hath no further limits then to such hard and barren Earths as lie alongst the Sea-coast onely. Objection.

To this I answere, that al-be this salt sea-sand be of infinite good & necessary use, inriching grounds wonderfully much, yet is not this experience of bettering of barren soiles, so strictly bound thereunto, but that without any use of the same, you may make your earth as fruitfull in Corne or Grasse, as hath beene already formerly declared. Answer.

Therefore if your ground lie much within the Land, and farre from the Sea, so that this commodity

of

Ordering earth where sands wanteth

of sand is not by any possible meanes to be gotten, then you shall (having first lookt into the nature of your ground, and finding it to be by all characters and faces a cold, barren, stiffe, dry Clay, yeelding nothing but a short mossie grasse, without any other burthen at all, as is seene upon most Plaines, and Downes of this Kingdome) first plow it and hacke it as was before shewed in the former part of this Chapter, then instead of sanding it, you shall lime it, as beforesaid, or rather a little more plentifully, then you shall meanure it, after (as at seed-time) you shall plow it and hacke it againe, then harrow it as before said; then to every aker of ground, you shall take two bushels of very dry bay Salt, and in such manner as you sowe your Wheate, you shall sowe this Salt upon the ground, then immediately after the sowing of the Salt, you shall sow your Wheate, which Wheate would bee thus prepared before you sow it; the day before you are to sowe your graine, you shall take Bay-salt and water, and mixing them together make a brine so strong that it will beare an Egge, then put the Wheate you are to sow into that brine, and let it steepe therein till the next day, then draine it as cleane as may bee from the brine, and so sowe it, harrow it, clot it, and weed it, as was before declared, and no doubt but you shall finde a marvellous great increase thereby: for this I can assure you, both from a most certaine knowledge, and a most worthy relation, that a Gentleman buying some store of seed-Wheate, and inforst to bring it home by Sea, by some casuall meanes some of the sackes at the unlading fell into the Sea, and were much drencht in the salt water, whereat the Gentleman being grieved (as doubting some hurt to come to the seed) yet inforst of necessity

Sowing of Salt.

The excellency of Salt.

to

to make use thereof, caused all the Wheate which was so wet to be sowne by it selfe in a particular place, and upon the worst ground which he had, (as much despairing in the increase thereof) and it is most infallibly true, that of that wet seed, hee received at least five-fold more profit than of any other, and from thence it came, that this experiment of Brine, and the sowing of salt hath taken place; from which the painfull Husbandman hath found such infinite increase to arise, that the use thereof will never be layed downe in this Kingdome, neither is the thing in it selfe, without good and strong probability of much increase and strength for the bettering of all manner of earable grounds; for there is nothing which killeth weeds, quicks, and other offences of the ground so much as saltnesse: for what makes your Pigeons dung and your Pullens dung to bee better for earable grounds then any other dung or meanure whatsoever, but by reason of the saltnesse thereof, by which saltnesse also, you may judge the strength and heate thereof, insomuch that the proper taste of fire, or any hot thing is ever salt; also wee say in Philosophy, that blood which carrieth the vitall heate and warmth of the body, is in taste salt, and so a nourisher, maintainer, and increaser of all the strength and vigour of the inward faculties; whereas Fleame, Choller, and Melancholly, which are the hurts and confounders of the vitall spirits; the first is in taste sweete; the second bitter; and the last of an earthy and dry taste, full of much loathsomenesse.

Beginning your for the sort of land to 23 (51) 35 & 100 for

Now againe you shall understand, that as you thus wet or steepe your Wheat seed, so you may also steepe any other seed, as Barley, Oates, Beanes, Pease, Lupins, Fetches,

Of steeping seed in brine.

all sorts of graine

Fetches, and such like; of which, your Beanes, Pease, and Lupins, you may steepe more than any of the rest, and your Oates the least.

As touching Rye, it shall be good not to steepe it all, for it is a great enemy to all manner of wet and moysture, in so much, that the curious Husbandman will forbeare to sow it in any great shower of raine, bearing in his mind this ancient adage or saying, that *Rye will drowned in the Hopper:* as on the contrary part, *Wheate would bee sowen so moyst, that it might sticke to the Hopper*; yet notwithstanding, when you doe sow Rye in any of these In-land and cold barren Countries, where sand is not to bee gotten, you shall not by any meanes omit the sowing of your salt before, for it is nothing neere so moyst as it is warme and comfortable.

CHAP. 3.

Of the Ordering, Tilling, and Dressing of all rough barren Clayes, whether simple or compound, being laden and overrunne with Gorse, Broome, and such like.

NExt unto these plaine barren earths, which by reason of their heights are subject in the Winter time to all manner of cold, frosts, stormes, tempests, blasts, and winds, which are the perfect hinderers of all increase and growth: and in the Summer time to all hot scorchings, scaldings, and fiery reflections of the Sunne, which on the contrary part, burneth and withereth away, that little seemeth increase which appeareth above the earth: I will place that barren Clay, whether it be mixt or unmixt, which lying not so high, and being subject unto those hurts and offences, seemeth to bee a little more fruitfull,

yet

yet either by the extreame cold moyſture thereof, or the ſtony hardneſſe, and other malignant qualities is no leſſe barren than that of which I have formerly written; which indeed is that barren and vile ſoile, which will neither beare Corne nor Graſſe, but is onerly over-run and quite covered over with great, thicke, and tall buſhes of Gorſe or Furs, which is a moſt ſharp, woody and groſſe weed; ſo full of prickes, that neither Horſe, Beaſt, Sheepe, nor Goates dare thruſt their noſes to the ground to gather up that little poore Graſſe which groweth thereon: And al-be theſe Gorſe or Furres, are one way a little commodity to the needfull Husbandman, in being a reaſonable good fuell, either for baking, brewing, or diverſe other ſudden and neceſſary uſes; yet, in as much as the profit being compared with the great quantity of earth which they cover and deſtroy, and which with good husbandry might be brought to great fruitfulneſſe, is indeed no profit at all; it ſhall not be amiſſe for every good Husband-man that is peſtered and over-laden with ſuch ground, to ſeeke by way of good Husbandry how to reduce and bring it to that perfection and excellency which may bee beſt for his owne particular commodity, and the generall good of the Kingdome wherein he liveth.

Then is there another kinde of ſoile which is nothing at all differing from this, but is every way as barren and ſterile, which is that ground which is overrunne with Broome (which is as noyſome a weed as the former) and though it have not ſuch ſharpe prickles as the other, whereby to hinder the grazing of Cattell; yet doth it grow ſo cloſe and thicke together, and is naturally ſo poyſonous and offenſive to graſſe, that

you shall seldome see any grow where this Broome prospereth; besides the bitternesse thereof is so unpleasant and distastfull to all kinde of Cattell, that not any will ever crop or bite upon the same, only it is of some necessary use for the poore Husbandman, in respect that it serveth him both for fuell, for thatching and the covering of his houses, (being for that purpose, of all, the longest lasting) and also for the making of Beesomes for cleansing of the House & Barnes, or else for sale and commodity in the Market; all which profits (as before I said) being compared with the losse of the ground, and the goodnesse that might be reaped from the same, are indeed truely no profits but hinderances.

Destroying of Weeds.

Therefore I would wish every man that is Master of such grounds, whether they be over-run with Gorse, Furres, Broome, or any such kinde of grosse, woody, or substantiall weed: first, to cut up the weed (of what sort soever it be) whether Gorse, Furres, or Broome) as close and neere unto the ground as you can possibly, and then making up them into sheafes or bigge faggots, carry them home and stacke them up very dry, so as no raine may enter or pierce into them, for the smallest wet will rot and consume them to dirt and filthinesse; which done, you shall make Labourers with hacks, picks, and such like tooles, to stubbe up all the Rootes which you left in the ground, even to the very bottome of the same; and these rootes you shall bee very carefull to have stubbed up exceeding cleane, by no meanes leaving (so neere as you can) any part or parcell of the rootes behind you; then those rootes thus stubbed up, you shall diligently gather together into little heapes as bigge as Moale-

How to plash fastly grow

hilles,

hils, and place them upon the ground a pretty distance one from another, and so let them lie till the Sunne and winde have dried them: for it is to be intended, that this labour must begin about the latter end of *Aprill*, and beginning of *May*.

Then so soone as you finde these rootes are thorowly dried, you shall pile them handsomely together, laying them a little hollow one from another, and then with a hacke cut up some of the same earth, and therewithall cover all the rootes quite over, onely leaving a vent-hole at the toppe, and on one side, and so let the hilles rest two or three daies, till the earth be a little parcht and dried, then take fire and some other light dry fuell which is aptest to blaze, and with the same kindle every hill, not leaving them till you see them perfectly on fire: which done, let them burne both day and night, till the substance being wholly consumed, the fire goe out of it owne selfe, and this in some Countries is called the *Burning of Baite*. Burning of baite.

Now as soone as the fire hath beene extinguished for two or three daies, you shall then come, and with shovels (and beetles to breake the hard burnt earth in pieces) you shall spread all the ashes cleane over the ground; which done, you shall with a very long plow teare up the earth into great and deepe furrowes, and divide it into Lands, as you shall thinke meete and convenient, laying them higher, or flatter, as you shall have occasion, and as the ground lyeth more or lesse within the danger of water, whether it bee the over-flowing of some neere neighbouring Brookes or Rivers, or else other standing Water occasioned by Raine & extraordinary Showers, which must be carefully lookt unto, because all over-flowes & inundati- Breaking of the burnt earth. Causes of unfruitfulnesse.

on of water, is a might y destroyer and consumer of graine: but these barren grounds of which I now write are very seldome oppreſt with water; for moſt commonly they lie ſo high, that the continuall dryneſſe thereof, is a ſtrong occaſion of the much unfruitfulneſſe. After you have thus burnt your baite, and plowed up your ground, you ſhall then with your hackes hacke it into ſmall picces, in ſuch manner as was declared in the former chapter; then you ſhall (if the Sea be any thing neere you) ſand it with ſalt ſand (as before ſaid) then lime it, and after, meanure it, either with Oxe-dung, Horſe-dung, rotten Straw, mudde of Ponds and Ditches, the ſpiteling of Houſe-floores, or ſweepings of Channels and Streets, or ſuch like, or for want of all theſe in caſe you dwell neere unto the Seacoaſt (where meanure for the moſt part is in greateſt ſcarcity, and the hardeſt to bee come by) you ſhall gather from the bottome of the Rockes (where the ſeydge of the ſea continually beareth) a certaine black weed, which they call Hemp-weed, having great broad leaves, and growing in great abundance, in thicke tufts, and hanging together like Peaſe-ſtraw; and with theſe weeds, you ſhall cover your lands all over of a pretty good thickneſſe, and then forthwith you ſhall plow it againe ſomewhat deeper, and with ſomewhat greater furrowes then before, raiſing up the new quicke earth to intermingle and mixe with thoſe meanures and helpes which you had formerly prepared and laid upon the ground; then ſhall you againe hacke it and harrow it; then ſhall you take Pigeons-dung, or Pullens-dung (that is, any kind of of land Foule whatſoever, but by no meanes any water-fowle) or Pigeons dung and Pullens-dung mixt together, and allowing to every Acre two or three

An excellent meanure.

Of Plowing.

Of divers meanures.

bushels

bushels thereof, which is the true quantity of seed proportioned for the some, and this dung being broken & masht into small pieces, you shall put into your Sydlop or Hopper, and in the same manner as you sow your Corne, you shall sowe this dung upon the ground, and then immediately after it, you shall sow your Wheate either steept in brine, or else salt Sea-water, or unsteept, as you shall thinke good, but in case you can neither get salt sand nor Sea-rocke-weedes, then you shall by no meanes omit the steeping of your Seede; neither shall you faile before you sow your Seed, to mixe with your Pigeons and Pullens dung, a full equall part of Bay-salt well dried and broke, and so sowen with the dung upon the Land, and then the Seed after it; which done, you shall harrow it againe, clot it, sleight it, and smooth it, in such sort as was formerly declared in the former Chapter, for these labours have no alterations, but must in all points bee done as was before set downe.

Mixture of meanures.

Now touching the weeding of this earth, after the Corne beginneth to grow above the ground, there is no feare to be had either of Thistles, Tares, Cockles, Darnell, Dockes, and such like strong weeds, which indeed are the issues of good grounds ill ordered and handled: but the weeds which you shall most feare in this place, is young Gorse, or Furs, or else young Broome, which are very apt to grow from the least part or parcell of roots that shall be left behinde; nay the very nature of those barren earths is such, that of its own accord it will bring forth those weeds, the cold sharpnesse of the aire mixing with the sterility and roughnes of the earth, being the cause that it wil give life to no other better plants; therefore so soone as you

Of weeding.

shall behold any of them to appeare above the earth, though they be not halfe a finger high, you shall presently with all diligence, pull them up by the roots and cast them away, or lay them in heapes that they may be afterwards burnt, and the ashes sprinkled upon the ground: and herein is to be observed, that the younger and the sooner that you doe pull up these weeds, the better it is, and the easilier they will come from the earth, and the sooner be destroyed: for all those mixtures wherewith already you have beene taught to mixe your earth, are in themselves such naturall enemies to all these kind of barren weeds, that should you omit the manuall labour of destroying them (which no good husband willingly will doe) yet in time the earth of it selfe, and the often plowing of the same would leave no such offence of weeds or other growths which might hinder the Corne.

Time for weeding.

Now touching the best time when to pull away these weeds, though generally it must be done assoone as they doe appeare above the ground; yet it shall not be amisse for you to deferre the work till after a shower of raine, and then immediately after the ground is wet (and so by that meanes more apt and willing to open and forsake the roots fastned within it, you shall with all diligence pull them out of the ground, and destroy them: neither shall you pull them out of the ground with your hands onely; for the Gorse have exceeding sharp pricks, so that with your naked hands you are not able to touch them, and to arme your hands against them, with strong thicke gloves, would be too boysterous and cumbersome, so that sometimes you might either misse the weeds, and pull up the Corne; or else pull up the Corne and weedes both together; therefore to prevent all these casualties

or hinderances, you ſhall take a paire of long ſmall wooden Nippers, made after the forme of this figure.

And with theſe you ſhall pull the weeds out of the ground, and caſt them into the furrows by the ſides of the Lands, till your daies-worke be finiſhed, and then with a rake you ſhall rake them together, and ſo lay them in heapes, to dry and wither, in more convenient places, that when time ſhall ſerve, you may burne them, and uſe them, as was before declared.

Gathering of ſtones.

Laſtly you ſhall have great reſpect, that if this ground bee very much troubled with looſe ſtones, as flint, pibble, and ſuch like, that then you very carefully get them gathered from the ground, both before and after you have plowed it, and to lay them on heapes in other vacant places, where they may ſerve for pavings, and ſuch like purpoſes when time requireth; but if the ground be over-run with great or elſe ſmall lime-ſtones, as for the moſt part theſe barren grounds are; then ſhall you with all care gather them up, and lay them in great heapes in ſome corner of your field where you may make a convenient lime-kilne, and ſo there burne theſe ſtones thus gathered, which will be both an infinit profit, and an infinit eaſe to the reſt of your labours.

CHAP.

CHAP. 4.

Of the Ordering, Tilling, and dressing of all rough barren Clayes, whether simple or compound, that are over-runne with Whinnes, and such like.

NExt unto this barren Clay which is over-run with Furres, Broome, and such like, I will place that barren and unfertile earth, being also a Clay, whether simple or compound, which is over-runne onely with Whinnes, and indeed bearing little or no other burthen, or if it doe beare any other burthen, as some little short mossie grasse, yet is that grasse so covered over with these sharpe Whinnes, that not any beast dare put his nose to the ground, or bite upon the same; and indeed, this kinde of earth is not any whit at all lesse barren than those of which I have already written: but rather more, in that the malignant qualities thereof are not so soone corrected, nor yet the vertues so soone restored.

What whinnes are.

Whinnes are a certaine kinde of rough dry weeds, which grow bushy and thicke together, very short, and close unto the ground, being of a darke browne colour, and of crooked growth, thicke and confused, and full of knots, and those knots armed with hard long, sharpe prickes, like thornes or bryars, they have little browne leaves which shadow the prickes, and doe wind their branches so one into another, that they can hardly be separated, yet is their growth at any time little more than an handfull above the earth, onely they spread exceedingly, and will runne and cover over a whole field, choaking up all sorts of good plants

what-

whatſoever, and turning the beſt graſſe that is to moſſe and filthineſſe, wherefore if at any time you be Maſter of any ſuch naughty and barren ground, and would have it reduced unto goodneſſe and fertility, you ſhall firſt take a fine thinne paring-ſhovell made of the beſt yron, and well ſteeled, and hardened round about the edges according to the forme of this Figure following.

And with this Paring-ſhovell, you ſhall firſt pare up all the upper ſwarth of the ground, about two inches, or an inch and a halfe thicke at the leaſt, and every paring would be ſome three foot in length at the leaſt, and ſo broad as the ſhovell will conveniently give it leave, and this ſwarth thus pared up, you ſhall firſt turne the Whinny or graſſe ſide downeward, and the earth-ſide upward, and ſo let it lie two or three daies in the Sunne to drie (for this worke is intended to begin in the moneth of *May*) and when that ſide is well dried, you ſhall turne the other ſide, and dry it alſo, then when all the ſwarth is dried, you ſhall gather ſixe or ſeven pieces together, and turning the Whinny or Graſſe ſide inward, and the earth ſide outward, you ſhall make round, hollow little hils thereof, much what according to the faſhion of this Figure following.

And

And the inward hollowneſſe like unto the hollowneſſe of an Oven, but much leſſe in compaſſe, which done, you ſhall fill the hollowneſſe with dry chips, or ſmall ſtickes, or Furres and Straw mixed together, which you ſhall put in at the venthole, which ſhall be left on one ſide of the hill, and kindling it with fire, you ſhall burne all that ſwarth in ſuch ſort as you burnt the rootes of your Furres and Broome before; for this is alſo called a burning of Baine, as well as the former; for it is a moſt principall nouriſher of the earth, and a very ſudden deſtroyer of all malignant weeds whatſoever.

Breaking of Baites.

After the burning of your hils, as ſoone as the fire is utterly quenched and gone out, and no heate at all left in the hilles, you ſhall then with clotting beetles beate them all downe to duſt, and then with ſhovels you ſhall ſpread the aſhes quite over all the ground, as was before declared in the former chapter: and herein is to be noted, that you muſt place theſe hils as thicke and cloſe together as by any meanes poſſibly you can, making your hils ſo much the leſſe and lower,

that

that they may ſtand thicker and neerer together, and ſo cover more ground, and thereby the heate and ſtrength of the fire to diſperſe it ſelfe over all that piece of ground; for the fire burning upon the ground, doth as much good for the inriching of the earth, and deſtroying of the weeds, as the aſhes doth which are ſpread upon the ſame.

Now after your bayte is in this manner burned and ſpread, you ſhall then (as was before ſhewed) plow up your ground in good large furrowes, then hacke it very ſmall, ſand it, lime it, and meanure it; and of all meanures, there is not any better for this ground then Oxe-dung and aſhes well mixt together; of which aſhes, thoſe of Beane-ſtraw, Peaſe-ſtraw, or any other ſtraw, are beſt; and thoſe of Wood or Ferne next, thoſe of Char-coale next, and thoſe of Sea-coale or Pit-coale are the worſt of all: Swines dung is not much amiſſe for this ground; for though it be a great breeder of weedes and thyſtles in good or fertile grounds, yet in this cold hard and barren earth it worketh no ſuch effect, but is a great comforter, and warme moiſtner of the ſame. Plowing.

After you have thus made your ground, as ſoone as Wheate ſeed-time commeth, which is the latter end of *September*, and beginning of *October*, you ſhall then with great care plow over your ground againe, and take great reſpect that you turne up your furrowes much deeper than before, and that for two ſpeciall cauſes; the firſt, that the new earth may the better mixe with the old earth, and thoſe helpes that are added thereunto: and ſecondly, that you may be ſurer to teare up the rootes of all the Whinnes from the very bottome of the earth, not ſuffering any part of them to remaine behind: and for this purpoſe it ſhall

not

not bee amiſſe to have an idle Boy or two to follow your Plow, and to gather away all the roots that ſhall be torne up, or any way elſe left bare above ground, which roots ſhall be laid on heapes in convenient places, and then after burnt, and the aſhes thereof ſpread upon the ground, which will be a very great comfort unto the ſeed, being a ſpeedy helpe unto the ſprouting thereof, and a very warme comforter of the roote after the ſtemme is ſpindled above ground, for in theſe cold barren earths, nothing doth ſo much ſpoile and ſlay the Corne, as the dead coldneſſe which lieth at the roote thereof; for in many of theſe unfertil places, you ſhall ſee Corne at the firſt ſowing (whileſt there is a little ſtrength in the ground) ſprout in great abundance, promiſing much hope of the profit; but when it ſhould ſpindle and come to much better perfection, that poore ſtrength being ſpent and conſumed, and the cold and dryneſſe of the ſoyle, having as it were overcome all matter of comfort, then preſently you ſhall ſee the blade of the Corne turne yellow, the ſtem or ſtalke to wither, and either put forth no eare at all, or elſe a very poore little empty one, being laden with nothing but a moſt drie chaffie huske without ſubſtance. But to come againe to our purpoſe, after you have thus plowed up your ground the ſecond time, you ſhall then hacke it againe, and harrow it; as was declared in the other former Chapters; then you ſhall take your ſeed-Wheate which hath beene ſteept either in brine or Sea-water, and to every buſhell of that ſeed, you ſhall adde a buſhell of Bay ſalt, and mixe them very well together in your Hopper or Sydlop, and ſo ſow them together upon the ground, obſerving to double your caſts ſo oft, that you may not faile to caſt that true quantity of ſeed into the earth which other-

why good Corne conſumed upon ground.

29 fo. 23.

therwise you would have done if so be there had been no mixture at all, for to doe otherwise were to deceive the ground, and a handfull of seed so saved, would be the losse of a pecke in the time of Harvest; therefore have great respect that your ground have his due, for it is no more cost, though it be a little labour.

Weeding.

When your seed is sowne, you shall harrow it againe the second time, clot it, smooth it, and sleight it, as was before declared in the former Chapters.

Harrowing.

As touching the weeding of this ground, it is the least labour of all other, for the earth being so corrected as is before shewed, it will naturally of it selfe put forth no weeds, especially if you remember to plow it deepe, and be sure to teare up and gather away all the quicke roots, otherwise if that labour be any thing neglected, then will it put forth both Whinnes, & great store of other rough weeds; which as soone as you shal perceive to appeare, you shall presently with your wooden Nippers pull them up by the roots, as was at large declared in the foregoing Chapter.

Profits.

Now for the generall profit of this ground thus made and prepared, it is the same that the two former are, that is to say, it will beare you good and sufficient Wheate, in plentifull abundance for the space of two or three yeeres, then Barley a yeere after; then Oates three yeere together after the Barley; and Pease or Beanes a yeere after the Oates; then lastly, very good Meadow or Pasture, for the space of three or foure yeares after, and then you shall beginne and dresse it againe, as was formerly declared.

2 fo. 14
fo. 37

CHAP.

CHAP. 5.

Of the Ordering, Tilling, and Dressing of all barren Clayes, whether simple or else compound, which are over-run with Ling, or Heath.

THere followeth now successively, another sort of barren earth, which indeed is much more sterile and barren than any of the other formerly written upon, because they, out of their owne natures, doe beare a certaine kinde of Grasse or foode which will relieve ordinary, hard, store-cattell, whether it be sheepe, Goates, or young beasts. But this earth of which I am now to intreate, bearing no Grasse at all, but onely a vilde, filthy, blacke, browne weede, which we call Ling or Heath, the tender tops whereof Cattell and wile Deere will sometimes crop, yet it is to them but little reliefe, and onely maintameth life and no more. Now al-be some may object unto me, that this kinde of soile is ever a sandy soile and no clay, as may be seene in most Chases, Forrests, and Downes: yet I answere, that al-be it hold so in generall; yet there are divers clayes, especially in Mountainous Countries, that are pestered with these kinde of weedes, as may be seene in the North and North-west parts of *Devon-shire*, in some parts of *Corne-wall*, and in many parts both of North and South *Wales*; and these clay-grounds which are thus offended with these weedes of Ling or Heath, are much more barren and unfruitfull than the sands, because of their much more coldnesse; yet those clayes which are mixed with either blacke sand, dun sand, or yellow sand, and over-runne thus with Heath or Lyng, are the most barren of all: to make any further description of this

Heath

Heath or Lyng, being a thing so notoriously knowne over all this Kingdome, I hold it meerely needlesse, onely to say it is a rough browne weede, shooting out abundance of stalkes from one roote, with little darke leaves, and flowers on the toppe, of a pale reddish colour, much inclining unto Peach-colour at the first, but being full blowne, they are then a little more whitish.

You therefore that have any such ground, and desire to bring it to fruitfulnesse, and the bearing of good Corne and Grasse in a reasonable abundance, you shall first with sythes or sharpe hookes (but old sythes are the better) cut downe all the heath, or Lyng which groweth upon the earth you intend to convert to goodnes, so neere the ground as possibly you can, then when it is cut downe (which would ever be at the beginning of the Moneth of *May*) you shall let it lie upon the ground, daily tossing and turning it till it become very dry, then spreading it all over the ground, and mixing or covering it with dry straw of any kind whatsoever, you shall presently set it on fire in so many severall corners of the field, that all the severall fires in the end may meete in one point, and not leave any part of the mowen Heath or Lyng unburnt, or any part of the ground unscorched; after this is done, and the ground cooled, you shall with your flat clotting beetles beate the ashes, hard into the ground, then you shall take a strong plow, with a broad-winged share, and an even colture, and you shall plow up all this ground thus burnt in every large and deepe furrowes, by no meanes picking out any of the quick roots which shall remaine in the furrowes so turned up, but letting them rest in the earth still, then with your hacks, and the help of your yron paring-shovell, you shall cut up the fur-

Destroying of Heath.

rowes, formerly turned up, into ſhort pieces of three foot, or three foot and a halfe long, and ſome leſſe, as occaſion ſhall ſerve; then with theſe pieces, you ſhall build little hollow hils, ſuch as in the former Chapter you made of the upper ſwarth of the ground onely; and then filling the hollowneſſe with dry heath, and dry ſtraw mixt together, you ſhall ſet every hill on fire, & ſo burne the very ſubſtance of the earth into aſhes, which will ſoone bee done by reaſon of the infinite number of rootes and ſmall ſtrings which lie mixt in the earth, and the dryneſſe thereof occaſioned by the former burning: And this is another kind of burning of Baite much differing from all the former, and yet to as great end and profit as any whatſoever, and theſe hils muſt as the former, be placed one as neere another as is poſſible, ſo as they may ſpread and cover over the greateſt part of the ground, and leaving no more then a good reaſonable path to paſſe betweene hill and hill.

Another burning of baite.

Now as ſoone as you have thus burned all your Baite, and that your hills are cold, you ſhall then as was before ſhewed in the former Chapters, with beetles and ſhovells breake down the hils, and ſpread the earth and aſhes over all the ground; which done, you ſhall ſand it (if the ſituation of the ground bee anſwerable thereunto) and lime it in ſuch ſort as was ſhewed in the ſecond Chapter; then when it is limed, and the Lime equally ſpread, not more in one place than in another, you ſhall then meanure it with the beſt meanure you can provide, of which there is none better or more proper for this ground then mans ordure, and the rubbiſh, ſweepings, parings, and ſpitlings of houſes mixt together, or for want of this (becauſe it may not be in ſo great plenty as

other

other meanures) you may take either old Oxe-dung, or Horse-dung, or for want of them, the old rotten and mouldy staddles or bottomes of Corne-stackes, or reeds; especially Pease-stacks, or Beane-stackes, provided that it be thorowly rotten, for the lesse rotten it is, the worse it is: Also the scowrings of common Sewers, and especially those through which much of mans urin doth passe, is a most wonderfull and beneficiall meanure for these grounds, so are also the scowrings of sinkes and channels which come from kitchins and wash-houses, where great store of brine and salt broth is shed, and other greasie, fat and putrified substances, as also abundance of sope-suds, and buck-ashes, and other sope and lee washings, then which there is no better meanure that can bee used for these kind of grounds.

After your ground is thus perfectly made and meanured, and that Wheat seed time doth draw on, which (as before was shewed) is ever at the latter end of *September*, you shall then plow up your ground againe in that manner as was shewed for the former earths; to wit, much deeper than before: for you are to understand, that this ground being dreft as is before declared, there will remaine nothing of the furrowes which were first plowed up but the ashes, which being covered with sand, lime, and meanure, the earth will lie plaine and levell, so that of necessity you must raise up new furrowes of new earth, which being done, you shall then with your hacks, cut all the new earth into very small pieces; mixing them well with the other mould made of sand, lime, meanure and ashes, then as was before said, you shall harrow it to make the mixture so much the better, and the mould so much

the finer; and then if it have beene sanded, you may sow your Seed-wheate simply of it selfe, without any doubt of the plentifull increase thereof; but if it have not been sanded, then as in the fore-going Chapter, you shall not onely steepe your seed in brine (as before shewed) but also you shall mixe your Seed with bay-salt, and so sow it into the ground; or if at the time of sowing (after it is plowed, hackt, and harrowed) you bestow either Pigeons-dung, or Pullens-dung, or Sheepes-dung upon the land, it will be much better, & the Corne will give a much greater increase. Now as soone as your Land is sowne, you shall then forthwith harrow it againe and cover the seed very close, then you shall clot it, smooth it, and sleight it (as was before shewed.)

Of Weeding. As touching the weeding and clensing of this earth after the Corne is sprung up, you shall understand that there is great care to be had thereunto, for this ground is much subject unto weedes, and those of the worst kinde; for although for the most part it will bee free from all manner of soft and tender weedes, as thistles, cockle, darnell, ketlockes, dockes, rape, and such like herball stuffe; yet is it much subject to twitch bryars, which grow at both ends, Lyng, Wild-time, and such like, any of which as soone as you shall see appeare or peepe above the earth, you shall presently with your Nippers pull them up by the rootes, and not suffer them in any wise to looke a handful above the ground; for if you doe, their hardnesse is so great, and their rootes so large and fast fixt in the mould, that you can by no meanes pull them away without great losse and hurt to the graine, pulling up with them all such roots of Corne, as shall bee fixed neere about them: for

any

any other weake and superfluous things which shall grow from the Land, you may with ordinary weeding-hookes cut them away; as for long Grasse, whether it be soft or sedgy, or any other such like stuffe, you shall not stirre it but let it grow, for it keepeth warme the rootes of your Corne, and giveth nourishment and increase thereunto: Now for the profit of this soile thus ordered and husbanded, it is equall with any of the former, and will beare Wheate very plentifully for the space of the three first yeeres; good Barley the fourth yeere, with the helpe of the sheepe-fold (as was before-said) and good Oates the fifth, sixth and seventh yeares; and very good small Pease the eighth yeere (for Beanes this soyle will very hardly beare at all) and the ninth, tenth, and eleventh yeere it will beare very good Meadow (though not altogether very fine pure Grasse, yet very good feeding and wholesome Grasse) or so good Pasture as a man can reasonably require for any holding Cattell whatsoever; nay, it will also indifferently well feed, and fat Cattell, though peradventure it requireth a little longer time than other finer grounds will.

Chap. 6.

Of the Ordering, Tilling, and Dressing of all plaine simple barren Sands, bearing nothing but a short mossie Grasse.

HAving thus (in as large manner as I hope shall be needfull for any judiciall or indifferent Reader) written of the Natures, Orderings, Plowings, & Dressings of all manner of barren and unfruitfull Clayes, whether they bee simple of themselves, or else com-

pounded with other earths, as ſands, chalkes, gravels, and ſuch like; ſhewing by thoſe naturall burthens which continually of their owne accords, they produce (which indeed is the eaſieſt and ſafeſt way of knowledge) how to amend and better them and bring them to that perfection of fruitfulneſſe, that the beſt earth ſhall but in a very ſmall degree exceede them: nay, hardly any thing at all, except in the ſaving of a little charge and ſome labour, without which nothing is to be obtained by the Husbandman; neither is this charge or labour thus beſtowed on theſe barren grounds to be grutcht at by any honeſt minde; ſince the worſt crop of ten or eleven, will make good his charge and toyle with a reaſonable intereſt; ſo that I make account, nine or ten yeares profits come into his Barnes without purchaſe, for it is to be intended that all theſe earths formerly ſpoken of, are not to be dreſt or to put the Husbandman to any charge more then the firſt yeere of tenne or eleven, for the ſecond yeare hee ſhall as ſoone as hee hath gathered his Wheate off, which will bee in *Auguſt*, and finiſht other parts of his Harveſt; preſently put his Plow into the ſame Wheate-ground againe and plow it up, hacke it, harrow it, ſow it, harrow it againe, clot it, and weede it, as in the former yeare, and ſo conſequently of all the reſt of the yeares following, whereby you perceive that all labours and charges are ſaved more then once plowing and ſowing.

This then conſidered, it neceſſarily now followeth that I ſpeake of the bettering and bringing into perfection of all manner of barren Sand-grounds, being ſimple of themſelves, without any mixture of other earths, except one and the ſame kind, as Sand with

ſand,

sand, though peradventure the colours of the sands may alter; as red with white, yellow with blacke, &c. which in as much as the whole substance is sand without any contrary mixture; therefore it may well be called simple and not compound; and of these sands, I purpose to intreate, as formerly I did of the Clayes; that is to say, by their outward faces and Characters, which are those burthens and increases which of their owne proper natures, without any helpe or compulsion of any others, they produce and bring forth into the world.

And first of that naughty cold and barren sand, which lying upon high, stony, and mountainous Rocky places, or else upon lower cold bleake Plaines, subject to the North and North-east winds and tempests, or bordering upon the Seas, doth not bring forth any thing but a short mossie Grasse which the Sunne maketh bitter, and the cold dewes fulsome and such unsavory in taste. If any man then be master of unprofitable & unfruitfull earth, and desire to have it brought to goodnesse and perfection, he shall, first, at the beginning of the Spring, as about midde *Aprill* or earlier, with a strong Plow answerable to the soile, yet somewhat lesse both in timbers and irons then that wherewith you Plow your Clay-grounds: you shall plow so much of that earth up as you may conveniently compasse to sowe and dresse exactly and perfectly; for to undertake more, were to make all unprofitable, and to cast away much labour and charge without any profit; this ground you shall plow of an indifferent depth, though not so deepe as the Clayes, and you shall lay the furrowes though flat, yet close one to another, without leaving any balke betweene, but plowing all very cleane; yet not so

Plowing.

very cleane and close together, that you may lay the greene swarth to the new plowed or quicke earth; but rather turne one swarth against another, so as the furrowes may lie, and no more but touch the edges one of another: This when you have done, you shall then with your hackes cut and breake all the earth so turned up into very small pieces, and not onely the earth so turned up, but also all other greene swarth which was left unplowed; provided, that before this labour of hacking, you let the ground lie certaine daies in the furrowes, that one swarth heating and scalding the other, they may both equally rot and grow mellow together, which once perceived by the blackenesse thereof, you may then at your pleasure hacke it and cut it, as is before declared.

Objection. Now some may in this place object unto me, that this labour of hacking should be needlesse, in as much as all sand grounds whatsoever are out of their owne natures so light, loose, and unwilling to dissever, that this toyle might very well and to good purpose bee saved.

Answer. To this I answere, that true it is, most sands in their owne natures are loose, and light, and willing to dissever into fine mold without any extremity, especially rich and fruitfull sands, whose predominant quality of warmth giveth nourishment and increase; but these barren and cold sands, in which is a certaine flegmatique toughnesse and most unwholsome drinesse, are of a cleane contrary nature, and through the stony hardnesse thereof, they are as unapt to breake and dissever as any Clay whatsoever: besides, the swarth being of a tough mossie substance (which ever carrieth a hard strong root answerable with the cold in which

hill sandy

Cold sandy

it

it is ingendered) doth so constantly bind, fetter, & hold the mold together, that it is impossible for any harrow to breake it in pieces, or to gather from it so much mould as may serve to cover the Corne and give it roote when it is sowne into the same; and therefore this worke of hacking is necessary.

When therefore you have thus hackt your Land, and distributed the mould into many small pieces, you shal then with all expedition marle it; which forasmuch as it is no generall or common practise in every part of this Kingdome, I will first tell you what Marle is, and then how to finde it, digge it, and use it for your best behoofe. Of Marling.

Marle, you shall then understand is (according to the definition of Master *Bernard Fallisly*) a naturall and yet an excellent soyle, being an enemy to all weedes that spring up of themselves, and giving a generative vertue to all seeds that are sowne upon the ground, or (for the plaine Husbandmans understanding) it is a certaine rich, stiffe, and tough Clay, of a glewy substance, and not fat or Oylie as some suppose. This marle is in quantity cold and dry and not hot (as some would have it) and it was earth before it came to bee Marle, and being made Marle yet it is but a Clay ground; all Chalke whatsoever was Marle before it was Chalke, and all manner of Stones which are subject unto calcynation or burning, as Lime-stone, Flint, or the like, were first Marle before they were stones, and onely hardned by accident, and so not possible to be dissolved but by fire: as for Marle it selfe when it is a little hardned, it is onely dissolved by frosts and nothing else, and thence is the cause that marle ever worketh better effects the second yeere than the first. Additions.

Chalke was marle.

This

This marle hath beene made so precious by some writers that it hath beene accounted a fift element, but of this curiosity I will not now dispute.

Touching the complexions or colours of marle, there is some difference, for though all conclude there are foure severall colours in marle, yet one saith, there is a white, a gray or russet, a blacke and yellow; another saith, there is a gray, a blew, a yellow and a red; and a third saith, there is a red and white mixt like unto porphery, and all these may well be reconciled, and the colours may alter according to the Climate and strength of the Sunne: So that by these Characters the colour, the toughnesse, and the loosenesse when it is dried, any man of judgement may easily know marle from any other earth whatsoever. This marle is so rich in it selfe, and so excellent for continuance, that it will maintaine and enrich barren grounds, the worst for ten yeeres, some for a dozen, and some for thirty yeares; yet there is a great respect to bee had in laying of this marle upon the ground, that is to say, that you lay it neither too thicke nor too thinne, that you give it neither too much, nor too little, for any of these extremities are hurtfull; and therefore hold a meane, and see there be an indifferent mixture betweene the marle and the earth, on which it is laid.

For the generall finding out of this marle, there is no better way for readinesse and the saving of charges, then by a great Augure or wimble of Iron made to receive many bits one longer than another, and so wrestingone after another into the ground to draw out the earth, till you finde you are come to the marle, which perceived and an assay taken, you may then digge at your pleasure.

Now

Now for the places most likely where to finde this marle, it is commonly found in the lowest parts of high Countries, neere Lakes and small Brookes, and in the high parts of Low Countries, upon the knols of small hils, or within the clifts of high mountainous bankes, which bound greater Rivers in: to conclude, you shall seldome finde any of these barren sands but they are either verged about with marle grounds, or if you will bestow the labour to digge below the sand, you shall not faile to finde either marle or some quarry of stone, or both; for in some places marle lieth very deep, in other some places within a spades graft of the upper swarth of the earth: therefore it shall bee good for you to make proofe of all the most likely parts of your ground to finde out this marle; and as soone as you have found it out, you shall with mattockes and spades digge it up and carry it to your land, there laying it in bigge round heapes, and setting them within a yard or two one of another; thus when you have filled over all your ground (which would bee done with as great speed as might bee, for the ancient custome of this Kingdome was, when any man went about to marle his ground, all his Tenants, Neighbours and friends would come and helpe him to hasten on the worke) you shall then spread all those heapes, and mixing the Clay well with the Sand, you shall lay all smooth and levell together; and herein is to bee observed, that if the land you thus marle shall lye against the side of any great Hill or Mountaine, whereby there will be much descent in the ground, then you shall (by all meanes) lay double as much marle, sand, or other compasse on the top of the Hill as on the bottome, because the raine

and

and ſhowers which ſhall fall will ever waſh the fatneſſe of the earth downe to the loweſt parts thereof.

Now in the laying of your marle, you are to hold this obſervation, that if you lay it on hard and binding grounds, then you are to lay it in the beginning of winter, but if on grounds of contrary nature, then it muſt be laid in the ſpring or Summer. Againe, you ſhall obſerve, that if you cannot get any perfect & rich marle, if then you can get of that earth which is called Fullers earth, and where the one is not, commonly ever the other is, then you may uſe it in the ſame manner as you ſhould marle, and it is found to be very neere as profitable.

☞ Additions. Obſervations.

When your ground is thus marled (if you be neere to the Sea-ſide) you ſhall then alſo ſand it with ſalt ſea-ſand, in ſuch ſort as was formerly declared, onely you may forbeare to lay altogether ſo much upon this ſand ground as you did on the Clay ground, becauſe an halfe part is fully ſufficient. If you cannot come by this ſalt-ſand, then inſtead thereof, you ſhall take chalke, if any be to be had neere you, and that you may lay in more plentifull manner then the ſand; and al-be it is ſaid, that chalke is a wearer out of the ground, and maketh a rich father, yet a poore ſonne, in this ſoyle it doth not ſo hold, for as it fretteth and waſteth away the goodneſſe that is in Clay grounds, ſo it comforteth and much ſtrengtheneth theſe ſand earths: and this chalke you ſhall lay in the ſame manner as you did your marle, and in the ſame manner ſpread it and levell it; which done, you ſhall then Lime it, as was before ſhewed in the Clay grounds, yet not ſo abundantly, becauſe alſo a halfe part will bee ſufficient; after your Liming, you ſhall then meanure it with the beſt meanure that you have, whether it bee

Of Chalke, and the uſe.

dung

dung of Cattell, Horse, Sheepe, Goats, Straw, or other rubbish; and that being done, and seed-time drawing on, you shall then plow up your ground againe, mixing the new quicke earth and the former soiles so well together, that there may bee little distinguishment betweene them; then you shall harke it againe, then harrow it, and lastly, sow it with good, sound, and perfect seed, and of seeds though Wheate will very well grow upon this earth, yet Rye is the more naturall and certaine in the increase: yet according to the strength of the ground, you may use your discretion, observing that if you sow Wheat, then to steep it before in brine or salt sea-water, as was before described; but if you sow Rye, then you shall sow it simply without any helpe, except it be Pigeons-dung, or Bay-salt simple of it selfe, in such manner as hath beene before declared; either sowing the Salt with the Corne, or before the Corne, as shall seeme best in your owne discretion.

After your seed is sowne, you shall then harrow it againe, clot it, smooth it, and sleight it, as before is shewed in the second Chapter, which done (after the Corne is shot above the earth) you shall then booke to the weeding of it, being somewhat a little too much subject to certaine particular weedes, as are Hare-bottles, wilde Chesse-boles, Gypsie-flowers, and such like, any of which, when you see them spring up, you shall immediately cut them away close by the rootes, as for tearing their rootes out of the ground with your Nippers, it is not much materiall, for the cutting of them is sufficient, and they will hardly ever againe grow or doe you any hinderance, many other weedes there may grow amongst these which are also to bee cut away, but

these

these are the principall, and of most note, wherefore as soone as you have clensed your lands of these and the rest, you shall then referre the further increase of your profit unto Gods providence.

The Profits.

Lastly, you shall understand that this ground being thus plowed, drest, and ordered, will without any more dressing, but once plowing and sowing, every yeere beare you good Wheate or good Rye three yeeres together; then good Barley the fourth yeere; good Oates the fifth, sixth, and seventh yeeres; excellent good Lupins the eighth yeare, and very good Meadow or Pasture three or foure yeares after, and then it shall be necessary to dresse it againe in such manner as was before described.

Put one yeares charge to pasture

CHAP. 7.

Of the Plowing, Tilling, Ordering, and Inriching of all barren Sands which are laden and over-runne with Braken, Ferne, or Heath.

NExt unto this plaine, cold, barren sand, which beareth no other burthen but a short mossie grasse; I will place that sand whith is laden and over-runne with Braken, Ferne, or Heath, as being by many degrees more barren then the former, both in respect that it is more loose, and lesse substantiall, as also in that it is more drie and harsh, and altogether without nutriment, more then an extreame steril coldnesse, as appeareth by the burthen it bringeth forth, which is Braken or Ferne, a hard, rough, tough weed, good for nothing but to burne, or else to litter storebeasts with, for the breeding of meanure; or if you strow it in the high waies where many travellers

passe,

passe, it will also there turne to good reasonable compasse.

Of this kind of ground if you be master, and would reduce it unto fertility and goodnesse, you shall first, whether the Braken be tall and high (as I have seene some as high as a man on Horse-backe) or short and low (as indeed most commonly these barren earths are, for tall Ferne or Braken shewes some strength in the ground) you shall with sythes first mowe it downe in the moneth of *May*, then wither it and dry it upon the ground, and after spread it as thin as you can over all the earth you intend to plow; which done, you shall bring your Plow and begin to plow the ground after this order: first, you shall turne up your furrow, and lay it flat to the ground, greene swarth against greene-swarth, then looke how broad your furrow is so turned up, or the ground so covereth, and just so much ground you shall leave unplowed betweene furrow and furrow, so that your land may lie a furrow and a greene balke, a furrow and a greene balke, till you have gone over all the ground, then shall you take a paring-shovell of yron, and pare up the greene swarth of all the balkes betweene the furrowes, at least two inches thicke, and into pieces of two or three foote long, and with these pieces of earth, and the dry Ferne which is pared up with them, you shall make little round hollow Baite-hils, as in the third and fourth Chapters; and these hils shall be set thicke and close over all the ground, and so set on fire and burnt; then when the fire is extinct, and the hils cold, you shall first with your hackes cut in pieces all the furrowes that were formerly turned up, and then breake downe the burnt hils, and mixe the ashes and earth with the other mould very well together; which done, you shall then

Of destroying Braken.

Of Marle.

then with all speede marle this earth as sufficiently as possibly may be, not scanting it of marle, but bestowing it very plentifully upon the same; which done, you shall then plow it over againe, & plowing it exceedingly well, not leaving any ground whatsoever unturn up with the plow; for you shall understand that the reason of leaving the former balkes, was that at this second plowing after the marle was spread upon the ground, the new, quicke, & unstirred fresh earth might as well bee stirred up to mixe with the marle, as the other dead earth and ashes formerly received, whereby a fresh comfort should be brought to the ground, and an equall mixture without too much dryness, and this second Ardour or plowing would begin about the latter end of *Iune*.

Sanding and Liming.

After your ground have beene thus marled, and the second time plowed, you shall then sand it with salt Sea-sand, lime it, and meanure it, as was declared in the fore-going Chapter: and of all meanures for this soyle, there is not any so exceeding good as sheepes meanure, which although of the Husbandman it be esteemed a meanure but of one yeere, yet by experience in this ground it happeneth otherwise, and is as durable, and as long lasting a compasse as any that can be used, and besides it is a great destroyer of thistles, to which this ground is very much subject, because upon the alteration of the ground the Ferne is also naturally apt to alter unto Thystle as wee daily see.

Sheepe Dunge in this ground lasts longe

P'owing and sowing.

When your ground is thus dreft and well ordered, and the seed-time commeth on, you shall then plow it againe, in such manner as you did the second time, that is to say, very deepe, cleane, and after the manner of good Husbandry, without any rest balkes or other

disor-

disorders: then shall you hacke it very well, then harrow it, and then sow it; but by mine advice, in any case, I would not have you to bestow any Wheat upon this soyle (except it be two or three bushels on the best part thereof for experience sake, or provision for your houshold) for it is a great enemy unto Wheate, and more than the marle hath no nourishment in it for the same, because all that commeth from the salt sand, lime, and meanure is little enough to take away the naturall sterility of the earth it selfe, and give it strength to beare Rye, which it will doe very plentifully; and therefore I would wish you for the first three yeeres onely, to sow the best Rye you can get into this ground; the fourth yeare to sow Barley; the fift, sixt, and seventh, Oates; and of Oates, the bigge blacke Oate is the best for this ground, maketh the best and kindliest Oatmalt, and feedeth Horse or Cattell the soundest; as also it is of the hardest constitution, and endureth either cold or drinesse much better than either the white Oate, the cut Oate, or any Oate whatsoever; the eight yeare, you shall onely sow Lupins or Fetches, and three yeeres after, you shall let it lie for grasse, and then dresse it againe as before said; for it is to be understood, that in all the following yeeres (after the first yeare) you shall bestow no labour upon this ground more then plowing, sowing, hacking and harrowing at Seed-time onely.

Labours after sowing.

But to proceed to the orderly labour of this ground, after you have sowne your Rye, you shall then harrow it againe, clot it, smooth it, and sleight it, as was before shewed in the second Chapter of this Booke. And although a man would imagine that the sandy loosenesse of this soyle would not neede much

clotting or sleighting of the earth, yet by reason of the mixture thereof with the Marle and meanure, it will so hold and cleave together, that it will aske good strong labour to loosen it and lay it so hollow and smooth as in right it should be.

Weeding. Touching the weeds which are most subject to this soile, they are Thistles, and young Brakes or Fernes which will grow up within the Corne, which before they rise so high as the Corne, and even as it were at the first appearing, you must with your wooden Nyppers pull up by the roots, and after take up and lay in some convenient place where they may wither and rot, and so turne to good meanure.

CHAP. 8.

Of the Plowing, Tilling, Ordering, and Inriching of all barren Sands which are laden and over-runne with Twitch, or wild Bryar.

HAving written sufficiently of this hard and barren, waste, wilde, sandy ground, which is over-run with Braken, Ferne, Heath, and such like: I will now proceede, and unto it joyne another sand which is much more barren, and that is the sand that bringeth forth nothing but wilde Twitch, Bryars, Thorne-bush, and such like undergrowth of young misliken wood, which never would rise or come to profit, the bitter cold drinesse of the earth wherein it groweth, and the sharpe stormes to which the clime is continually subject both day and night, blasting it in such manner that nothing appeareth but starved, withered, and utterly unprofitable burthens, good for nothing but the fire, and

that

that in a very ſimple ſort. Such ground if you be Maſter of, and would reduce it to profit and fruitfulneſſe, you ſhall firſt with hookes or axes cut up the upper growth thereof, that is, the buſhes, young trees, and ſuch like, then you ſhall alſo ſtubbe up the rootes, not leaving any part of them behind in the earth, carrying away both home to your houſe to be imployed either for fuell, or the mending of the hedges, or ſuch like, as you ſhall have occaſion; this done, you ſhall take a paire of ſtrong yron Harrowes, and with them you ſhall harrow over all earth, tearing up all the Twitch, Bryars, and rough Graſſe ſo by the rootes; that not any part but the bare earth may bee ſeene, and when your Harrowes are cloyed, you ſhall unlade them in ſeveraſl places of the ground, laying all ſuch rubbiſh of weedes and other ſtuffe, which the Harrowes ſhall gather up, in a little round hill, cloſe up together that they may ſweat, wither and dry, then ſpreading them abroad and mixing them well with drie ſtraw, burne them all over the ground, leaving no part of the weeds or Graſſe unconſumed, then without beating in of the aſhes, you ſhall preſently plow the ground all over very cleane as may be, laying the furrowes as cloſe as you can one to another, and leaving no earth untoucht or untorne up with the Plow, which done, you ſhall immediately hacke it into ſmall pieces, and as you hacke it, you ſhall have idle boyes to goe by the Hackers, to gather away all the rootes which they ſhall looſen or break from the mould, and laying them on heapes in the worſt part of the ground, they ſhall there burne them, and ſpread the aſhes thereon, after your ground is thus harrowed, plowed, and hackt, you ſhall then mucke it, as was formerly ſhewed in the

Deſtroying of Twitch and Bryar.

ſixt chapter, then ſhall you ſand it, lime it, and meanure it as beforeſaid.

Meanures. Now of meanures, which are moſt proper for this ſoyle, you ſhall underſtand that either Oxe, or Horſe meanure, rotten ſtraw or the ſcouring of yards is very good, provided that with any of theſe meanures, or all theſe meanures, you mixe the Broad-leaved weeds, and other greene weedes, which grow in ditches, brookes, ponds or lakes, under Willow trees which with an Iron rake, drag, or ſuch like inſtrument, you may eaſily draw upon the banke, and ſo carry it to your land, and there mingle it with the other meanure, and ſo let it rot in the ground, this meanure thus mixed is of all other moſt excellent for this ſoile, both by the experience of the Ancients who have left it unto memory, as alſo by daily practice now uſed in ſundry parts of this Kingdome as well becauſe of the temperate cooleneſſe thereof, which in a kindly manner aſſwageth the lime and ſand, as alſo through the moyſture which diſtilling through thoſe warme ſoiles doth quicken the cold ſtarved earth, and giveth a wonderfull increaſe to the ſeed that ſhall be throwne into the ſame.

Harrowing and other labeures. After your ground is thus ſufficiently dreſt with theſe ſoiles and meanures, you ſhall then plow it againe the ſecond time; which would be after *Michaelmas*, after the plowing you ſhall then hacke it againe, and bee ſure to mixe the earth and the meanures very well together, then you ſhall breake it in gentle manner with your Harrows, and then ſow it; which done, you ſhall harrow it againe, but then you ſhall harrow it much more painefully, and not leave any clots or hard earth unbroken that the Harrow can pull in pieces: as

touching

touching the seed which is fittest for this earth, it is the same that is spoken of in the next foregoing chapter: as namely, the best Rie or the best Maslin, which is Rie and Wheate equally mixt together; or if there be two parts Rye, and but one Wheate, the seed will be so much the more certaine and sure holding, and this seed you may sowe on this ground three yeares together, then Barley, then Oates, and so forth, as is formerly writ of the grounds foregoing. After your ground is sowne and harrowed, you shall then clot it, sleigh it, and smooth it as you did the other grounds before, and then lastly with your backe Harrowes, that is, with a paire of Harrowes, the teeth turned upward from the ground, and the backe of the Harrow next unto the ground, you shall runne over all the ground and gather from the same all the loose Grasse, Twitch, or other weeds that shall any waies be raised up, and the same so gathered, you shall lay at the Lands end in heapes, either to rot for meanure, or else at the time of the yeere to be burnt for ashes, and sprinkled on the earth the next seed time.

Lastly touching the weeding of this soile, you shall understand the weedes which are most incident thereunto, are all the same you first went about to destroy: as namely, Twitch, rough wild Grasse, and yong woody under growth, besides Thistles, Hare-bottles, and Gipsie flowers; therefore you shall have a great care at the first appearance of the Corne, to see what weedes arise with it; (for these weeds are ever fully as hasty as the Corne) and as soone as you see them appeare, both your selfe and your people with your hands shall pull them up by the roots, and so weede your Land as you would weede a garden, or Weed- Weeding.

ground. Now if at this first weeding (which will bee at the latter Spring commonly called *Michaelmas*, or the Winter Spring) you happen to omit and let some weeds passe your hands unpulled up (which very well may chance in so great a worke) you shall then the Summer Spring next following (seeing them as hie or peradventure higher than the Corne) with your wooden Nippers pull them up by the rootes from the ground, and so cast them away: As touching the cutting them up close by the ground with ordinary weed-hookes, I doe in no sort allow it, for those kinde of weeds are so apt to grow, and also so swift in growth, that if you cut them never so close in the Spring, yet they will againe overmount the Corne before Harvest, and by reason of their greatnesse, roughnesse, and much hardnesse choake and slay much Corne that shall grow about them, and therefore by all meanes you shall pull these weeds up by the rootes whilst they are tender, (if possibly you can) or otherwise in their stronger growth, sith their sufferance breedeth great losse and destruction.

CHAP. 9.

Of the Plowing, Tilling, Ordering, and Inriching of all barren Sands which are ever-ruine with mores or morish stinking long Grasse.

NTo these fore-going barren Sands, of which I have already written, I will lastly joyne this last barren Sand; being of all earths, whether clay or sand the most barrennest, and that is that filthy, blacke, morish Sand, which beareth nothing but a stinking, putrified,

trified Grasse or Mosse, or Mosse and Grasse mixed together, to which not any Beast or Cattell, how course or hardly bred soever, will at any time lay their mouthes: and this kinde of ground also is very much subject to marishes and quagmires, of which that which is covered with Mosse, or Grasse, is the worst, and that which is tufted above with rushes, the best and soonest reduced unto goodnesse; in briefe, all these kindes of grounds generally are extreamely moyst and cold, the superabundance whereof is the occasion of the infinite sterility and barrennesse of the same.

And therefore he that is master of such unprofitable earth, & would have it brought to some profit or goodnesse, shall first consider the situation of the ground, as whether it lie high or low, for some of these marish grounds lie low in the Valleys, some on the sides of Hils, and some on the tops of Mountaines; then whether the much moystnesse thereof bee fed by River, Lake or Spring, whose veines not having currant passage through or upon the earth, spreads soakingly over all the face thereof, and so rotting the mould with too much wette, makes it not onely unpassable, but also utterly unprofitable for any good burthen.

Now if you finde that this marish earth lie in the bottome of low valleys, as it were gerdled about with hils or higher grounds, so that besides the feeding of certaine Springs, Lakes or Rivers, every shower of rain or falling of water from higher grounds bringeth to these an extraordinary moisture to maintaine the rottennesse, in this case this ground is past cure for Grasse or Corne, and would onely be converted and made into a fish-pond for the breeding and feeding of fish, being a

Ground for Fish-ponds.

thing no lesse profitable to the Husbandman for keeping his house, and furnishing the market then the best Corneland he hath; and therefore when he maketh any such pond, he shall first raise up the head thereof in the narrowest part of the ground, and this head by driving in of stakes and piles of tough and hard wood as Elme, Oake, and such like, and by ramming in of the earth hard betweene them, and sodding the same so fast that the mould can by no meanes be worne down or undermined with the water, he shall bring it to as firme earth as is possible, and in the midst of this head he shall place a sluce or flood-gate made of sound and cleane Oke Timber and plankes, through which at any time to drayne the Pond when occasion shall serve, and this done, you shall dig the Pond of such depth as the earth conveniently will beare, and casting the earth upon either side, you shall make the bankes as large and strong as the ground requireth, then if any spring which did before feed the earth bee left out of the compasse of the pond (because it lieth too high to bee brought in) then shall you by drawing gutters or draines from the spring downe to the Pond, bring all the water of the springs into the pond, and so continually feede it with fresh and sweete water. Then storing it with Fish of best esteeme, as *Carpe*, *Tench*, *Breame*, *Pearch*, and such like, and keeping it from weeds, filth and vermine, there is no doubt of the daily profit.

But if this marish and low ground, though it lie low and have many springs falling upon it, yet it lieth not so extreame low but that there is some River or dry ditches bordering upon it, which lie in a little lower discent, so that except in case of inundation the River and ditches are free from the moysture of this ground,

but

but where there is any overflowing of waters, there this marish ground must needs be drowned, in this case this ground can hardly be made for Come, because every overflow putteth the graine in danger, yet may it be well converted to excellent pasture or meddow, by finding out the heads of the springs, and by opening and cleansing them, and then drawing from those cleansed heads, narrow draines, or furrowes, through which the waters may passe to the neighbour ditches, and so bee conveyed downe to the lower Rivers; leaving all the rest of the ground dry, and suffering no moystures to passe, but what goeth through these small deepe channels, then as soone as summer commeth, and the ground begins to harden, if you see any of the water stand in any part of the ground, you shall forthwith mend the draine, and helpe the water to passe away, which done, (as the ground hardeneth) you shall with hackes and spades lay the swarth smooth and plaine, and as early in the yeare as you can conveniently, you shall sow upon the ground good store of Hay-seeds, and if also you doe meanure it with the rotten staddles or bottomes of Hay-stackes, it will be much the better, and this staddell you shall not spread very thicke, but rather of a reasonable thinnesse, that it may the sooner rot and consume upon the same.

good for pasture bad for Come

But if this marish and filthy ground doe not lie so low as these low valleyes, but rather against the tops of hils, you shall then first open the heads of all the springs you can finde, and by severall draines or sluces, draw all the water into one draine, and so carry it away into some neighbouring ditch and valley; and these draines you shall make of a good depth, as at least two foot, or two foot & a halfe, or more, if need require,

Draining of wet ground.

require, and then crosse-wise, every way over-thwart the ground, you shall draw more shallow furrowes, all which shall fall into the former deepe draines, and so make the ground as constant and firme as may bee: then having an intent to imploy it for Corne, you shall bring your Plow into the ground, being a very strong one, and not much differing in Timber-worke or Irons from that which turneth up the Clay-grounds, and laying before the Plow long waddes or roules of the straw of Lupins, Pease, or else Fetches, (but Lupines is the best) you shall turne the furrowes of earth with the Plow upon the waddes, and so cover or bury them in the mould, and thus doe unto every furrow, or at least unto most of the furrowes you turne up, and so let it lie a little time to rot, as by the space of a fortnight or three weekes, in which space, if the ground receive not raine and moysture enough to rot the straw thus formerly buried, you shall then by stopping the draines, and making the Springs over-flow, gently wash the ground all over and no more, and then presently draine it againe; which done, as soone as the earth is dry, you shall hacke it and breake into small pieces, and then you shall also Sand it, Lime it, and meanure it.

And lastly, you shall marle it, but if no salt sand be to be had, then in stead of it, you shall chalke it, yet of all therest you shall take the least part of Chalk.

This done, about the latter end of *July* you shall plow up the ground againe with somewhat a better and deeper stitch then you did before, that if any of the straw be unrotted or unconsumed, it may againe be raised up with the new moyst earth, and so made to waste more speedily, and if at this second carrying you doe

doe see any great hard clots to rise, then with your hackes you shall breake those hard clots in pieces, laying the Land cleane without clots, weeds, or any other annoyance, and so let it rest till *October*, at which time you shall plow it over againe, hacke it, harrow it, and then sow it with the best seed-wheate; for this soile thus drest and meanured, albeit it be of all other the most barren, yet by reason of this moysture which at pleasure may be put to it, or taken from it, and by the mixture of these comfortable soiles and compasses, it is made as good and fruitfull as any earth whatsoever, and will beare Wheate abundantly for the space of three yeeres together; then good Barley the fourth yeare, with a little helpe of a Sheepfold, or sheepes meanure; then Rye the fifth yeare; Oates the sixth, the seventh and eighth yeares; small Pease, the ninth yeare; good medow or pasture three yeeres following, and then to be new drest againe, as beforesaid.

what sure ?

Now as soone as your seed-wheate is sowne, you shall then harrow the ground againe, and bee sure to cover the Wheate both deepe and close, as for the clots which shall arise from this soile, it shall not matter whether you breake them, or no, for by reason of their moisture, they will be plyant and easie for the wheate to passe thorow, so that you shall not care how rough your land lie, so it lie cleane, and the Corne well covered, but for all other seedes, you shall breake the clots to dust, and lay the land as smooth as may be. Harrowing.

Now for the weeding of this soile, you will not be much troubled therwith, because this ground naturally of it own accord, putteth forth no weeds, more then these which are ingendered by the new made fruitfulnesse Weeding.

fulneſſe thereof, and thoſe weeds for the moſt part are a kind of ſmall ſedge, or hollow reed; any of which if you ſee appeare, or with them any other kinde of weed; you ſhall at the firſt appearance, either pull them up by the rootes with your wooden Nippers, or elſe cut them cloſe by the ground with your weed-hookes.

CHAP. 10.

A generall way for the enriching of any poore arable ground, either Clay or Sand, with leſſe charge than formerly.

IF the former demonſtrations and inſtructions which I have ſhewed thee, appeare neither too difficult, or too coſtly (for now I ſpeake to the plaine, ſimple, poore Husband-man) and yet thou art maſter of none but barren earth, then thou ſhalt by thine owne induſtry, or the induſtry of thy children, ſervants, and ſuch like, or by contracting with Taylors, Botchers, or any poore people that will deſerve a penny, gather up, get or buy all the ragges, ſhreds, and baſe pieces of woollen Cloth whatſoever, which are onely caſt out, and fit for nothing but the dung-hill, and of theſe if thou canſt compaſſe but a ſacke full, or a ſackefull and a halfe, it is ſufficient for the dreſſing of an acre of arable ground. Theſe ſhreads and ragges (borne ſmall) or hacke and hewed into ſmall pieces or bits, thou ſhall thinnely ſpread over the Land before fallowing time, then comming to fallow, plow them all into the ground, and be ſure to cover them, then give your land the reſt of its dores, as ſtirring, foyling, ridging, &c. in their due ſeaſons, and after

Ragges of wollen cloth.

after an husbandly manner: then when you come to sowit, you shall take the slimy thicke water which commeth from dung-hils, or for want thereof, water in which Cow-dung hath beene steeped, and therein you shall steepe your seed-Corne, that is to say, if it be Barley, you shall steepe it for the space of thirty six houres, or thereabouts; if it be Wheate, but eighteene houres, and if it be Pease, but twelue houres; for Rye or Oates, not at all: and the seed thus steeped, you shall sow it according to good Husbandry, and there is no doubt of wonderfull increase.

Steeping of Seed-Corne.

Or any pulse.

There be others which take the seed-Corne, & steeping it in good store of Cow-dung and water, stirre all together for an houre in the morning, and an houre at night, and then being setled, draine the water from the seede and the dung, and the next morning sowe the Corne and the dung both together on the land, being sure not to scant the land of seed, and no doubt the increase will be wonderfull.

Now if this cannot be conveniently done, or that you want dung, if then you take ordinary water, and therein steepe your seed, it is good also, and especially for Barley, as is approved by daily experience.

But now me thinkes I heare the poore man say, that here is but one acre dreft, and that is a small proportion: to this I answer, if thou beest able but to dresse one acre with these woollen ragges, thou shalt then search amongst the Horners, Tanners, Lanthorne-makers, and such like, and get all the wast shavings of horne which thou canst possibly compasse, and as before of the rags, so of these a sacke and a halfe, or two sacks will dresse an acre: these shavings (which are indeed good for no other use) you shall scatter upon the land as you did the rags, then plow them in after the same manner, so order

Shavings of horne.

order the ground, so sow, and in the same manner steepe the seed, and questionlesse the increase will bee wonderfull great: these meanures will last five yeeres without any renuing. Now if of these you cannot get sufficient to trimme all your ground, you shall then deale with Butchers, Sowse-women, Slaughter-men, Scullions, and the like; and from these you shall get all the hoofes you can either of Oxe, Cow, Bull, Calfe, Sheepe, Lambes, Deere, Goates, or any thing that cheweth the cud, and which indeed, if not for this use, are otherwise utterly cast away to the dung-hill, and despised; and these hoofes you shall cut and hew into small pieces, and scatter thicke upon your Land at fallowing time, then plow them in as aforesaid, and doe in all points as with the other meanures already recited, and so steepe your seed, and there cannot bee a greater inricher of arable ground whatsoever.

Hoofes of cattell.

Now if all these will not yet compasse your land, you shall then see what sope ashes you can get or buy, for of all meanures there is none more excellent, for besides it giveth an exceeding strength and fatnesse to the Land; it also killeth all manner of weedes, great and small, as Broome, Gorse, Whynnes, and the like, and it killeth all manner of Wormes, and venomous creeping things, it is excellent for Woad, and the ground renewed yearely therewith, may bee sowne continually: these sope-ashes must bee laid on the land after the fallowing, and then stirred in, two load thereof will serve to dresse an Acre: when it is fit for seede, the seed must bee steept as aforesaid, and then sowne, and the increase will quit the charge manifold. These sope-ashes are also excellent good for Hempe and Flaxe, being thinnely sowne upon the land,

Of Woad.

land, after is plowed, and immediately before the ſeed be ſowne: But if you have more land to dreſſe, then you muſt make uſe of your owne ordinary meanure, as is Oxe-dung, Horſedung, and the like, which that you may make richer and ſtronger than otherwiſe of it owne nature it would be, you ſhall cauſe continually to bee throwne upon it all your poudred beefe-broth, and all other ſalt brothes or brines which ſhall grow or breed in your houſe, alſo all manner of ſope-ſuddes, or other ſuddes, and waſhings which ſhall proceed from the Laundery, and this will ſo ſtrengthen and inrich your meanure that every loade ſhall bee worth five of that which wanteth this helpe. There be divers other meanures which doe wonderfully inrich and fatten all manner of barren grounds, as namely the haire of beaſts hides (which for the moſt part Tanners and Glovers doe caſt away) this thinnely ſpread on the land, and plowed in, brings every yeere a fruitefull croppe. Againe, if Braken or Ferne bee layed a foote thicke upon the earth, and then a layer of earth upon it, then another layer of Braken, and another layer of earth, and ſo layer upon layer till the heape bee as bigge as you intend it, and ſo left to rot all the Winter following, there cannot bee a better meanure for any arable ground; for you ſhall underſtand that the earth will ſo rot the Braken, and the braken ſo ſoake into the earth, that they will become both one rich ſubſtance. And herein you ſhall note, that whenſoever you would have any ſubſtance (of what condition ſoever) quickely to rot and turne to meanure, that the onely way is to mixe it with earth, and that will in ſhort ſpace bring it to rottenneſſe. Now this Braken and earth thus rotted, you ſhall lay upon your land as you

The inriching of ordinary meanure.

The haires of beaſts hides.

Of Braken.

To rot dung quickly.

you doe your ordinary dung of Cattell, and then sow your seed being steept, as aforesaid.

Of Malt-dust.

Next, your Malt-dust which is the sprout, come, smytham, and other excrements of the Malt, is an excellent meanure for arable land, allowing three quarters thereof for an acre, and strowing it upon the land after it is plowed and ready to be sowne.

Of rotten Pilchers and garbage.

There is another meanure, which albe it is not plentifull every where, yet in some places it is, and not inferiour to any meanure before spoken of, & that is your rotten Pilchards after the Oyle is taken from them, and the carcasses cast to the dung-hill, this laid on the land, and plowed in, bringeth Corne in great abundance, and no lesse doth the carcasses and garbage of all kind of fish whatsoever, especially of sea-fish.

Of blood offals

Lastly, the blood, entrals, and offall of any beasts is an excellent meanure for any kind of graine, plant, or tree, but especially for the vine, for to it there is no nourishment of greater force or efficacy: also, if this blood be tempered with Lyme, it is exceeding comfortable for graine, and destroyeth wormes and other creeping things which hurt Corne, onely it must not be applied presently, but suffered for a little time to rot, left the too much heate thereof might scorch and doe hurt to the roote of the Corne: this meanure is to be laid on the earth when you sow it, and so the seed and it harrowed or plowed in together, which done after the order of good workmanship, there is no doubt of the increase.

CHAP.

CHAP. II.

How to enrich for Corne, any barren, rough, woody ground being newly stubbed up.

IF you have any barren wooddy ground which is newly stubbed up, and that you would convert it to arable, you shall then take a great quantity of the under-wood, or worst brush-wood which was cut from the same, and in the most convenientest place in the field, as in the middest, or neere thereabout, you shall frame it into a broad hollow pyle, and then cover it all over with great soddes of earth, which done, set fire on it, and leave no part thereof (either wood or earth) unburnt, then take those ashes and spread them all over the field so farre forth as you meane to plow up, then with a good strong Plow fallow the ground as deepe as you can, and so let it rest till it bee almost *May*, then take either Ferne, Stubble, Straw, Heath, Furres, Sedge, Beane-stalkes, or any other waste growth, take I say either any one, or more of these, or all together, as you stand possest of them, and burne them to ashes, and therewith cover your land the second time, and then in Summer stirre it, within a Moneth after soile it, then at the beginning of October, or a little before, plow it againe, and sow it with Rye the first croppe, and you shall see the increase will bee very plentifull, the next yeere you may sow it with Wheate, the third yeere with Barley, the fourth yeere with Pease, Lupins, Fetches, or any other Pulse, and then beginne with Wheate againe; for it is credibly said, that this man-

Wood-ashes.

Ashes of Ferne Straw, &c.

ner of dressing these barren, woody grounds, shall maintaine and keepe the earth in good heart and strength (in the worst places) for the space of foure yeares; in that which is any thing reasonable for the space of six yeares; and where there is any small touch of fertility for the space of sixteene yeeres; of which there are daily experience in *France*, about the forrest of *Ardenu*, and some with us here in *England* in many woody places.

CHAP. 12.

The manner of reducing againe, and bringing unto their first perfection all sorts of Grounds which have beene, overflowed, or spoyled by salt-water, or the Sea-breach, either arable, or pasture, as also the enriching or bettering of the same.

The difficulty of this labour.

THere is nothing more hard or difficult in all the Art of Husbandry, then this point of which I am now to intreate, as namely, the reducing and bringing unto their first perfection all sorts of grounds which have beene over-flowed or else spoiled by the Sea-breach, and bringing in of too great abundance of salt water, which to some men (of little experience, and free from those dangerous troubles) may appeare a matter very sleight, and the wound most easie and curable, and the rather because in all my former relations and demonstrations touching the bettering of every severall sort of ground, I doe apply as one of my chiefest ingrediens or simples, by which to cure Barrennesse, Salt-weeds, Salt-sand, Salt-water, Salt-brine, Ashes, Lime, Chalke, and many other things

The vertues of Salt.

fo 35. 16-17

things of ſalt nature, as indeed all meanures & marles whatſoever muſt either have a ſalt quality in them, or they cannot produce fruitfulneſſe) ſo that to argue ſimply from naturall reaſon, if ſalt be the occaſion of fruitfulneſſe and increaſe, then there cannot be much hurt done by theſe over-flowes of the ſalt water, but that it ſhould rather adde a fattening and enriching to the ground then any way to impoveriſh it, and make it incapable of growth or burthen. But experience (which is the beſt Miſtreſſe) ſhewes us the contrary, and there is nothing more noyſome and peſtilent to the earth then the ſuperabundance and too great exceſſe of ſaltneſſe; for according to our old Proverb of *omne nimium*, that too much of every thing is vitious: and as wee ſee in the ſtate of mans body, that your ſtrongeſt poyſons, as *Antimony* or *Stibium*, *Coloquintida*, *Rabarb*, and the like, taken in a moderate nature, are moſt healthfull, and expell all thoſe malignant qualities which offend the body and occaſion ſickneſſe; but taken in the leaſt exceſſe that can be deviſed, they then (out of their vitious and naughty qualities) doe ſuddenly and violenly deſtroy all health, and bring upon the body inevitable death, and mortality; ſo is it with this matter of ſalt, and the body of the earth, for as by the moderate diſtributing thereof, it correcteth all barren quallities, diſperceth cold and naughty vapours, and yeeldeth a kinde of fatneſſe and fruitfulneſſe, whereby the ſeede is made more apt to ſprout, and the ground more ſtrong and able to cheriſh the ſame till it come to perfection, through the ſharpe, warme, and diſperſing quality thereof; ſo being beſtowed in too great abundance and exceſſe, whereby the earth is ſurfeited, and as it were over-

The vices which come from Salt.

The abuſe of Salt in exceſſe.

come and drowned up with too much of this naturall goodneſſe and helpfull quality, then all his proper vertues turne to egregious vices, as his wholſome ſharpneſſe to a fretting, gnawing, and deſtroying greedineſſe; his comfortable warmeneſſe to a conſuming and waſting fierineſſe, and his gentleneſſe in diſperſing, to an infectious and venomous pollution, by the joynt qualities of all which together, the ground is made neither fitte to receive any thing from the hand of the Husbandman, nor yet to produce or bring forth any thing of it ſelfe, becauſe every good quality is abuſed or expelled, and nothing but unnaturalneſſe and ſterility left; which like a Serpent lodgeth in the ground and will ſuffer no good thing to have ſociety with it; and theſe are the effects and miſchiefes which are occaſioned by theſe Sea-breaches or inundations of the ſalt-water.

Of ſalt moderately uſed.

It is certaine that although in the ſalt marſhes, where the Sea commeth in at certaine times and onely waſheth or ſprinkleth the ground all over and ſo departeth, there is neither want of Graſſe, nor yet complaint of any evill quality in the graſſe, yet it is moſt certaine that no over-flow of ſalt-water how little or moderate ſoever, can be truely ſaid to bee wholeſome for any kinde of Graſſe ground whatſoever; for Graſſe is compounded of an infinite world of plants and ſimples, and moſt of them of ſeverall natures and qualities, ſo that if it give nourishment to one, yet it may deſtroy ten; neither doe I finde it by any of the Ancients ſimply and properly applied unto the Graſſe grounds, but firſt unto the arable, in which having ſpent its primary or firſt ſtrength upon the ſeed (which is a great and greedy devourer or eater up of the ſtrength

No overflow of ſalt water good for graſſe.

and

and fatnesse of the earth) it then prepares and makes the ground more able and fit to bring forth grasse, and that of the best and finest kinde, for although the Masters of the Salt marshes finde a singular and rare profit in those grounds for the feeding, breeding, fatting, and sustaining of their great flockes of sheepe, which upon these salt grounds, they say, will never rot or perish by that universall disease, yet must they not impute that to the great quantity, goodnesse, or any growth in the grasse, but to the salt which they licke up in the grasse, and to the salt quality of the Grasse, which is not onely an antidote or preservative against that noysome and pestilent mortality, but also a delightfull and pleasant food wherein those Cattell take more contentment then in any other thing whatsoever, so that I must necessarily rest upon this conclusion, that as but moderate washing and over-flowing of salt waters are no certaine or particular great helpes unto grasse grounds, especially if they be applied thereunto, and to that purpose simply at the first, without any other preparative or working by a former meanes, as by tillage, digging, delving, or the like; so the exceeding great inundations or Sea-breaches which lie long soaking and sinking into the earth must needs be a certaine, infallible, and almost incurable cause of barrennesse, eating, spoiling, and consuming the very rootes of all manner of plants, trees, and growths, by which the ground is made utterly incapable of generation or bringing forth: and therefore where these great inundations or overflowings cannot bee either prevented or avoyded, but as the seasons of the yeare they doe and must hold their courses, there I would not wish any man to bestow either his labour or his cost, for it is losse of time and losse of substance: but

The grounds of the salt marshes.

A true cause of barrennesse.

Where this annoyance is incurable.

Where it is curable.

where it is to be prevented or avoyded by induſtry, of that thoſe overflowings or Sea-breaches come and happen by caſualty or change, as either by the unnaturalneſſe and ſuperabundance of tides being driven in by the violence and impetuouſneſſe of outragious winds, or by any neglect or breach in the Sea-wall, or other miſhaps of the like nature, which happeneth ſometimes ſcarce once in an age, at the moſt not above once or twice in many yeares; in theſe caſes there is moſt certaine remedy, and the grounds ſo ſpoiled and waſted, may by art and induſtry bee againe reduced and brought to the former perfection and goodneſſe; nay many times amended and freed from many faults and ſterrl qualities, to which it was either naturally addicted, or elſe by chance and accident grew thereunto, by continuall wearying and imployment, without reſt, or refreſhing by the artificiall meanes of wholeſome meanures, or other ſtrengthnings which ought to be applied before thoſe faults grew into extremities.

The manner of the cure.

Now touching the cure of theſe grounds which are thus worne out, decayed, and made barren by theſe inundations of ſalt water, the owner thereof is firſt to draw into his conſideration, that is the malignity and evill quality of the earth is growne by too much fretting, gnawing, and waſting of the ſalt, ſo it muſt be allayed and qualified by a quite contrary condition, which is freſhneſſe: the contrary then to ſalt water, muſt of neceſſity be freſh water, ſo that you are to caſt about in your judgement, and by the view ſituation, and levell of the ground (which for the moſt part can have but little difficulty in it, becauſe theſe grounds upon which the Sea thus breaketh, muſt ever be the loweſt of all other, ſo that a true deſcent com-

One contrary helps another.

By tryal water

ming

ming unto it, and a true ascent comming from it, there is no hardnesse to convey any water course thereunto) looke how to bring a freshnesse which may conquer and overcome this saltnesse, and that must therefore be fresh water, which by channels, ditches, furrows, sluces, & the like, you may bring from any fresh river, spring, pond, or other fresh water course (though removed some distance of miles from the place to which you would convey it) to the very place to which you desire to have it, and with this fresh water you shall wash and gently drowne over so much of your spoiled ground as you shall be able reasonably to deale with all in other costs and labours for that yeare; and if you have plentifull store of fresh water, then having (as I said) dround it over gently, about 4 inches, or halfe a foote deepe, you shall so let it lie 2 or 3 daies, then draine away that water by the helpe of back ditches, or by sluces made for that purpose, which if the situation of the ground deny you, and that there is no such convenient conveyance, then you shall in the lowest part of the ground (either joyning upon some other spoyled ground, or upon the Sea-wall or banke) place a Coy, which may either cast the water into the other ground, or else over the wall and bank into the sea, and having thus drained away the first water, you shall then open your sluces of fresh water againe, and drowne your ground over the second time, and doe in all things as you did before, and thus according to the plentifulnes of your fresh water, you shall drowne your ground, or at least wash it over with fresh water twice a week before the beginning of the Spring, and if the salt water have lane long, or be but new departed, then you shall use your fresh water for some part of the Spring also.

The watering with fresh water.

How to draine away the fresh water:

How oft to drowne the earth.

Now some may object unto me here (and it is a

Helpes if fresh water be wanting.

Whether brackish water be wholesome.

not wholsome

matter altogether unlikely (that in some of these places where these inundations and breaches are, it is impossible either to finde fresh water, or to bring fresh water unto them, because all the springs for many miles about being made naturally brackish, and the rivers by the infection of the salt tides, having lost the greatest part of their sweete freshnesse; the question now resteth, whether these brackish waters are wholsome for this purpose, I or no? To this I must needs answer, that they cannot in any wise bee good for these spoyled grounds, because the earth naturally is of an attractive and drawing condition, sucking and gathering unto it selfe any thing that is of a sharpe, sweet, or sower taste, and especially saltnesse, so that being covered with those brackish waters, it will draw from them onely their salt (of which it hath too much already) and no part of the freshnesse which should qualifie and amend it: therefore if either your ground be thus situated, or your necessities thus unsupplied, it is better that you rather forbeare this labour of washing or drowning your earth (though it be the first, the speediest, and surest cure of all other) then by watering it with infinite and unwholesome waters, rather increase the mischiefe, than any way delay it.

The first time of plowing, & the observations therein:

After you have watered your ground (if it be a work impossible to be attained unto) or otherwise neglected it (being a thing not possible to be found) you shall then about the latter end of *March* plow up all the ground with a good deepe stitch, turning up a large furrow, and laying it into lands, raise them up as much as you can, and make them round, then looke of what nature or temper the earth is, as whether it bee fine sand, rough gravell, stiffe clay, or a mixt earth, or any of these contraries together: If it be a fine sand, either

How to mixe earths.

white,

white, red, or browne, it matters not whether, then you shall take any clay earth which is free from these salt washings, being of a meane or small stiffenesse, and likewise of as meane and little richnesse, which being digged out of some banke, pit, or other place where least losse is to be had, you shall carry it in tumbrels or carriages to the new plowed ground, and there first lay it in heaps as you doe meanure, then after spread it all over the land, and being dry, with clotting beerles breake it as small as you can possibly, for this hungry clay being of no rich or fat condition, will so sucke and draw the salt into it, that it will take away much of the evill quality, and mixing his tough quality with the loose condition of the sand, they will both together become apt for fruitfulnesse and generation.

If the soyled ground bee a rough hard gravelly earth, then you shall mixe or spread upon it the best and richest fresh clay you can get, or if there be any such fruitefulnesse neere about you, then with a good blew marle, for that is the coolest and the freshest, and will the soonest draw out the salt from the gravell, and give it a new nourishment, whereby any seed shall be fedde and comforted which is cast into it. The mixture for Gravell.

If the spoyled earth be of it owne nature a stiffe and tough clay, which is but seldome found so neere the Sea-shore, then after the plowing, you shall mixe it, and cover it over with the freshest and finest sand that you can possibly get, for that will not onely separate the salt from the clay, and take away the naturall toughnesse and stiffnesse of the same, which hindereth and suffocateth the tender sproutes, so as they cannot easily get out of the earth, but also by lending a gentle warmth, will asswage the cold quality of the clay, The mixture of Clay.

and

and make it bring forth moſt abundantly.

The mixture of mixt earth.

Laſtly, if the ſame ſpoiled earth be of a mixed quality, then you ſhall looke whether it be binding or looſening, if it be binding, then you ſhall mixe or cover it with fine freſh ſand, if looſening, then with a reaſonable rich and tough clay, for ſo you ſhall bring it to an open and comfortable tempter, making it able both to receive, cheriſh and bring forth the ſeede; which before either too much wet, or too much drineſſe did ſtifle and bind up within the clots and mould, ſo as it had no ſtrength to beare himſelfe through the ſame.

The ſecond plowing.

When you have covered your lands with this mixture, you ſhall then plow it over againe before *Midſomer*, turning the new laid earth under the old earth, and as ſoone as that labour is finiſhed, you ſhall then lade forth your meanure or compaſſe unto it, in which you are to have a great care what meanure you elect for this purpoſe, for it is not the richeſt and fatteſt meanure, as your Pigeons-dung, or Pullens-dung, Lime, Chalke, or aſhes, your Horſe-dung, your ſhovelings upon high-waies, your beſt hoves, your horne ſhavings, your Hemp-weed, or any other weed which groweth neere ſeydge of the Sea, neither your Oxe or Cow-dung, though of all before named, that is the beſt which doth the moſt good upon theſe ſpoyled grounds, becauſe they have all in them a ſtrong quality of ſaltneſſe or ſharpeneſſe, which will rather adde then diminiſh the evill quality of the earth, but inſtead of theſe you ſhall take the mudde of dried bottomes of Lakes, Ponds, and Ditches of freſh water, and the moyſture or wetter ſuch mudde or bottomes are, the better it is, or Straw which is rotted by ſome freſh water courſe, raine, or the like, by no meanes

Election of meanures.

The beſt meanure.

that

that which is rotted by the urine or ſtale of Horſe or Cattell, for that it is the ſalteſt of all other; or you may take any weeds which you ſee grow in freſh rivers, ditches, ponds, or lakes, eſpecially thoſe which grow at the bottomes of Willow, Sallow, or Oſier trees, or you may take the old ragges of wollen cloth, or any other meanure which you know to be the wolleſt or freſheſt, and with any of theſe or all of theſe together, you ſhall plentifully cover your ground all over, and immediately upon the covering or laying on, ſee you preſently plow it, land after land; for to give it any long reſpit after it ſpread, the Sunne out of his attractive and ſtrong nature will exhale and draw out all the vertue from your meanure, and ſo ſpoyle much of your labour.

The ordering of the meanure.

The third plowing.

When you have thus meanured it, and plowed it, you may then let it reſt till *Michaelmas*, at which time you may plow it the laſt time, and then ſow it with the ſtrongeſt and hardeſt Wheate you have, of which the white Pollard is the beſt, and there is no queſtion but if it bee ſafe from a ſecond Inundation, your croppe will both bee plentifull and rich, and alſo acquit and pay largely for all your former charges. The ſecond yeere you need but onely plow it as aforeſaid; and then ſew it with good Hempſeed, and be aſſured you will have a brave crop ariſe thereof; then the third yeare you ſhall plow it as flat as you can, ſtill throwing it downe and not raiſing it up at all, and then ſow it with the beſt Oates you can get, according to the nature and ſtrength of your Countrey, and bee ſure to harrow it well, and to breake every clot, and make the mould as fine as is poſſible, and the next yeare after your Oates, lay it for graſſe, and I dare be bold, it will beare reaſonable mea-

The laſt plowing, and the Sowing.

The ſecond yeare ſowing and third.

Laying the earth for graſſe.

dow,

dow; yet would I not have you this yeare to preſerve it for that purpoſe; but rather to graze it with ſheepe or Cattell, eſpecially ſheepe, of which I would have you lay on good ſtore; for it matters not how neare or cloſe to the ground they eate it; for the next yeare it will be come to the fulneſſe of perfection; and be as profitable or more profitable ground then ever it was, and then you may apply or accommodate it for what uſe you pleaſe, either arable meadow, or for continuall grazing.

Of Grazing.

And thus much touching the manner of reducing againe, and bringing unto their firſt perfection, all ſorts of grounds which have beene over-flowed or ſpoyled by ſalt water, or the ſea breaches; whether it bee arable or paſture; as alſo the enriching or bettering of the ſame.

CHAP. 13.

Another way to enrich barren paſtures, or meadowes, without the helpe of water.

IF your barren paſtures or meadows be ſo ſeated that there is no poſſible meanes of waſhing or drowning them with water, you are then onely to reſtore and ſtrengthen them by the efficacie of meanure or ſoyle, without any other helpe, and this may diverſe waies be done, as by thoſe manner of meanurings which I have formerly treated of. But to goe a better and briefer way to worke, and more for the eaſe and capacity of the plaine Husband-man, whenſoever you ſhall be

poſſeſt

possest of these barren pastures, if the barrennesse proceed from sand, or gravell, then some Husbands use to meanure the pasture over with the best clay they can get, first laying it in heapes, then spreading it, and lastly with clotting beetles breaking it into as fine dust as they can get, and this labour they commonly performe as soone as they can after Harvest when the latter spring is eaten, and the earth is most bare, but if the barrennesse proceed from an hungry, cold and dry clay, then they meanure it with the best moorish black earth which they can get, or with any moyst meanure whatsoever, especially and above the rest, when the soyle that is digged out of old ditches, ponds, or dried up standing lakes, and this earth must be laid plentifully upon the ground in meanure heapes, as aforesaid, that is to say, first in great heapes, then after broken and dispersed over the whole ground, and lastly broken into small dust, & mixed with the swarth of the ground, and this labour as the other is generally performed after the Harvest as a time of most convenience, and giving the earth a fit respite to sucke in the strength and comfort of the new earth, and also having all the Winter after with his frostes, snowes, and showers, to mellow, ripen and mixe together the one earth with the other, and doubtlesse this is a most exceeding good husbandry, and not to bee refeld or carpt against by any knowing or sound judgment, onely it is not the most absolutest, or best of all waies whatsoever, but that others may bee found somewhat more neare, and somewhat more commodious.

Clay meanure

Morish earth.

Therefore whensoever you shall be owner of any of these barren pastures, or meadowes, of what nature or condition soever the earth be, whether proceeding from

The best way to enrich pasture or meadow.

from gravell, sand, clay, or pestered with any other malignant quality whatsoever, to reduce it to fertility and goodnesse in the shortest time, and to the most profit, about the moneth of *March*, when all pasture grounds are at the barest, and doe as it were remaine at a stand betweene decreasing, and increasing, you shall begin then to leade forth your meanure for the refreshing of these earths, and the meanure which you shall carry unto these grounds, shall be the soyle of streetes within Cities or Townes, or the parings and gatherings up of the High-waies much beaten with travell, also the earth for two or three foote deepe which lieth under your dung-hill when the dung is removed, and carried away, for this is most precious and rich mould, and is not alone excellent for this use, but also for the use of Gardens, for the strengthning and comforting of all sorts of tender plants, and for the use of Orchards, for the comforting both of old and young Trees, when at any time their Rootes are bared, or otherwise when their groweth any mislike or decreasing.

The soile of the streets, or high-aies.

Earth under dung-hils.

To enrich gardens, or Orchards.

You shall also take the fine earth or mould which is found in the hollow of old Willow trees, rising from the roote up, almost to the middle of the tree, at least so farre as the tree is hollow, for then this there is no earth or mould finer or richer.

The mould of willow in trees.

Of all of these meanures, or of any one of them, or of as many as you can conveniently get, you shall lead forth so much as may very plentifully meanure & cover your ground all over; you shall first lay it on the earth in reasonable big heaps, and that the Sunne may not exhale the goodnesse out of it; and then at your best leasure, and so soone as you can conveniently, you shall spead it universally over the field, dispersing it

as

as equally as you can, unlesse your field be more barren in one place then in another, which if it be, then you shall lay the greatest plenty where it is most barren, and the lesse where you finde the greatest fertillty, yet by all meanes see you scant not any place, but give every one its due; for to doe otherwise would shew much ill husbandry.

Now it is the use of some Husbandmen, that what mould or earth they lade out from sixe of the clock in the morning, till three of the clock in the after-noone, that they make their Hinds spread in the evening before they goe to supper, and questionlesse it is a very good course, and worthy to be imitated of every good Husband. The spreading of mould.

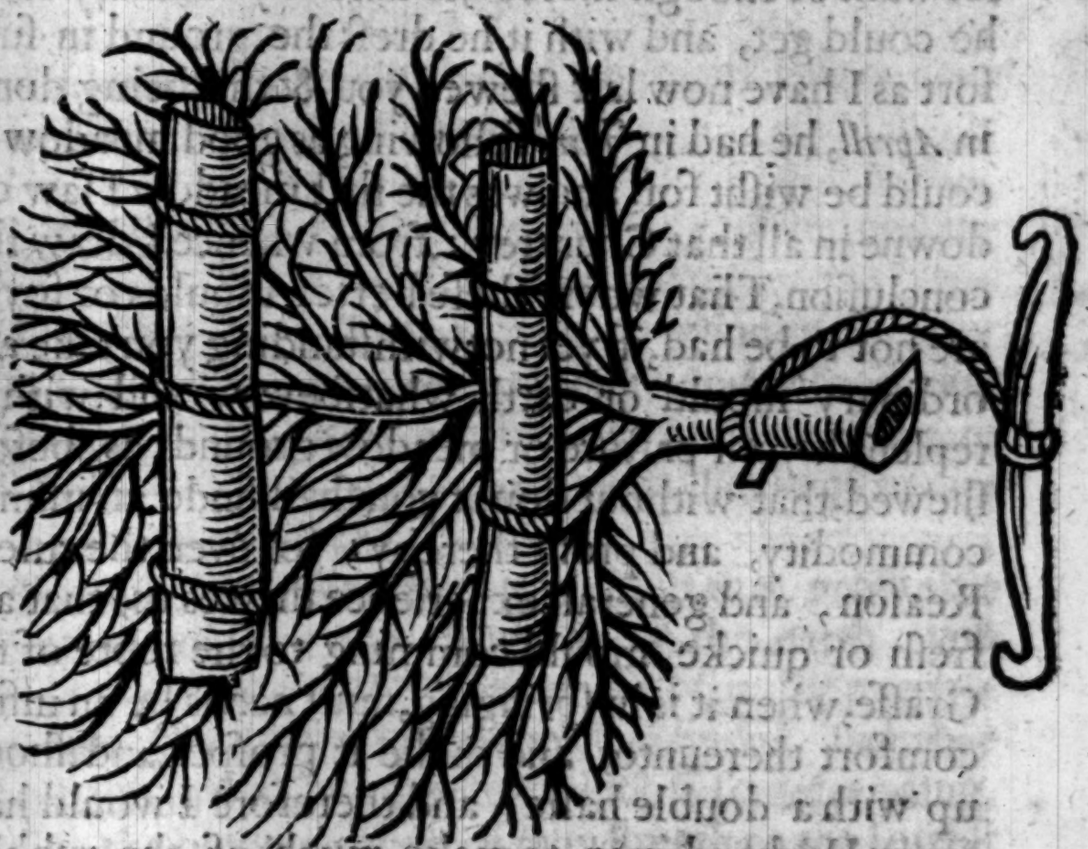
After you have laid forth your mould, and spread it all over your pasture or meadow, then you shall make some boyes, girles, or other poore people, to picke and gather up all the stones, stickes, or other unnecessary matter which might happen to bee led forth with the mould, and to picke and lay the pasture so cleane as is possible, which done, it is to be intended that yet notwithstandiug this ground will lie exceeding rough, both in respect of the clots of earth, which will not easily be broken, as also in respect of naturall toughnesse, of these rich moulds which at this time being digged up in in the wet, will not easily be separated or dissolved; and therefore when you have finished the labours beforesaid; you shall let the clots rest till the Sunne and weather have dried them, then after a good ground shower (observing to take the first that falleth) you shall harrow all your ground over after this manner. Of Stone gathering.

You

A new way of Harrowing.

You ſhall cut downe a pretty big white Thorn-tree, which we call the Hawthorne-tree, and make ſure that it be wonderfull thicke, buſhy, and rough growne, which done, you ſhall plaſh it as flat as you can, and ſpread it as broad as you can, and thoſe branches or boughes which of neceſſity you muſt cut in ſunder, you ſhal againe plaſh and thruſt into the body of the Tree, binding them with cords or withes ſo faſt thereto, that they may by no meanes ſcatter or ſhake out, and if any place appeare hollow or thinne, and cannot come to lie hard, firme, and rough upon the ground, then you ſhall take other rough buſhes and thruſt into the hollow places, and bind them from ſtirring, alſo till you have made your plaſh full and equall in all places, and that all the roughneſſe may as in a flat levell equally touch the ground, when you have thus proportioned your Harrow, you ſhall then take great logges of wood, or pieces of timber, and with ropes binde them on the upper ſide of this rough Harrow, that the poiſe or weight of them may keepe the rough ſide hard and firme to the earth, and then the Harrow will carry this proportion or figure.

To



To the bigge end of this Harrow, you ſhall fixe a ſtrong rope, with a Swingle-tree with Treates, Coller, and Hames, and one Horſe is fully ſufficient to draw it round about the paſture or meadow, ſo with this Harrow you ſhall Harrow the ground all over, and it will not onely breake all the hard clots to a very fine duſt, but alſo diſperſe them and drive them into the ground, and give ſuch a comfort to the tender roots of the young graſſe then newly ſpringing, that it will double and treble the increaſe. And for mine owne part, this experience I my ſelfe have ſeene upon an extreame barren paſture ground in *Middleſex*, where none of theſe good moulds or ſoyles could be got, but the Husband was faine to take all the rubbiſh & courſe earth, even to the very ſweepings of his yard, and

Of rubbiſh and ſweepings.

for want of enough thereof, to take any ordinary earth he could get, and with it he dreſt the ground in ſuch ſort as I have now laſt ſhewed you, & this being done, in *Aprill*, he had in *June* following as good meadow as could be wiſht for, and was the firſt meadow I ſaw cut downe in all that Countrey: from whence I draw this concluſion, That where theſe better moulds or foyles are not to be had, if yet notwithſtanding you take any ordinary mould or earth whatſoever, and with it repleniſh your paſture or meadow grounds as before ſhewed, that without doubt you ſhall finde an infinite commodity, and profit thereby; for even the rule of Reaſon, and generall experience ſhewes us, that any freſh or quicke mould comming to the roote of the Graſſe, when it is in ſpringing, muſt needs be an infinit comfort thereunto, and make it proſper, and ſhoote up with a double haſte, and therefore I would have every Husband-man to make much of the rubbiſh, ſweepings, parings, and ſpytlings of his houſe and yard, as alſo of ſhovellings up of the high waies, back-lanes, and other ſuch places, and eſpecially, if they bee any thing clayie, or moriſh, or ſandy mixt with any other ſorle; for of them he ſhall finde great uſe, according to the husbandry and experience already deſcribed.

take any mould

Of ſope-aſhes. Laſtly, there is not any thing that more enricheth paſture or meadow ground then Soape-aſhes, being thinnely ſcattered and ſpread over the ſame, and this labour would ever be done at the latter end of *Aprill*, for then Graſſe is beginning to ſhoote up, and at that time finding a comfort, the increaſe will multiply exceedingly.

CHAP. 14.

How to enrich and make the most barrenest soile to beare excellent good pasture or meadow.

TO speake then of the bettering and enriching of these barren earths, and reducing them to good pasture or meadow, it is to be understood, that there are but two certaine waies to compasse and effect the same, namely water or meanure.

Two waies to enrich earths.

You are then when you goe about this profitable labour to consider the scituation of the earth, you would convert to pasture, and to elect for this purpose the best of this worst earth you can finde, and that which lies lowest, or else that which is so descending, as that the bottome thereof may stretch to the lowest part of the continent, for the lower that such grounds lie, the sooner they are made good, and brought to profit. Next you shall consider what burthen or grasse it beares, and whether the Grasse be cleane and entire of it selfe (which is the best and the likeliest soile to be made fruitfull) or else mixt with other worser growths, as thistles, heath, broome, or such like, and if it be burthened with any of these naughty weedes, you shall first destroy them by stubbing them up by the roots, and by burning the upper swarth of the earth with dry straw mixt with the weedes, which you shall cut from the same, then it shall be good for certaine nights both before the first and latter Spring to fold your sheepe upon this ground, and that not in a scant manner, but very plentifully, so as the dung of them may cover

over all the earth, and their feete trampling upon the ground, may not onely beate in the dung, but also beate off all the swarth from the earth, that where the fold goeth, there little or no Grasse may be perceived, then whilest the ground is soft, and thus trampled, you shall sow it all over with Hay-seeds, and then with your flat boord beetles beate the ground smooth and plaine, which done, you shall then strow, or thinly cover over the ground with the rotten staddles of Hay-stackes, and the moyst bottomes of Haybarnes, and over that you shall spread other strong meanure, of which Horse-dung, or Horse-dung and mans ordure mixt together is the best, or for want of such, either the meanure of Oxen, Kine, or other beasts; and this meanure also you shall spread very thinne upon the ground, and so let it lie till the Grasse come up through the same, which Grasse you shall by no meanes graze or feede with your Cattell, but being come to the perfectnesse of growth, you shall mow it downe, and although it will bee the first yeare but short and very course, yet it skilleth not, for the ensuing yeares, shall yeeld the profit, and bring forth both so good Grasse, and such plenty thereof as reasonably you can require: for this is but the first making of your ground, and alteration of the nature thereof, neither shall you thus dresse your ground every yeare, but once in twenty, or forty yeares, having plenty of water to relieve it. When therefore you have thus the first onely prepared your ground by destroying the barren growth thereof, and by meanuring, sowing, and dressing it, you shall then carefully search about the highest parts of the ground, and the highest parts of all other grounds, any way neigh-

neighbouring round about it, and somewhat above the levell thereof, to see if you can finde any Springs in the same, (as doubtlesse you cannot choose but doe except the ground be of more then strange nature,) and the heads of all such Springs as you shall finde, you shall by gutters and channels draw into those ditches which shall compasse your meadow round about, observing ever to bring the water into that part of the meadow ditch which ever lieth highest, and so let it have a currant passage through the ditches downe to the lower part thereof, and so into some Lake, Brooke, or other channell, and in this sort you may bring your water a mile or two: Nay I have seene water brought for this purpose, three or foure miles, and the gaine thereof hath quit the charge in very plentifull manner.

Of watering grounds.

But if you cannot finde any Springs at all, nor can have the helpe of any Lake, Brooke, River, or other Channell of moving water, (which is a doubt too curious, as being cast beyond the Moone) you shall then not onely cast ditches about this your meadow ground, but also about all other grounds which shall lie about, and that in such sort, that they all may have no passage but into the upper part of the meadow ditch, so that what raine soever shall fall from the Skie upon those earths, it shall bee received into those ditches, and by them conveyed into the meadow ditch: and to augment the store of this water, you shall also in sundry parts of those upper grounds which are above the meadow, in places most convenient, digge large Ponds or Pits, which hoth of themselves may breed, and also receive all such water as shall fall neere about them, and these Ponds or Pits being filled (as in the Winter

Helpes in the watering.

time necessarily they must needes be at every glut of raine) you shall presently by small draines made for that purpose, let the water out from them into the ditches, and so into the meadow ditch, and so stopping all the draines againe, make the Ponds or Pits capable to receive more water.

When and how to water.

When you have thus made your ground rich with water, and that you see it flow (as in the Winter-time necessarily it must) in plentifull manner through all your ditches, you shall then twice or thrice in the yeere, or oftener, as you shall then thinke meete in the most convenientest places of the meadow ditch, stop the same, and make the water to rise above his bounds, and to over-flow and cover your meadow-ground all over, and if it be a flat levell ground, if you let the water thus covering it to lie upon the same the space of foure or five daies, or a week, it shall not be amisse; and then you may water it the seldomer. But if it lie against the side of a hill, so that the water cannot rest upon the same, then you shall wash it all over, leaving no part unmoystened, and this you shall doe the oftener, according as the weather shall fall out, and your water grow more or lesse plentifull.

The best season for watering.

Now for the best season or time of the yeere for this watering of meadowes, you shall understand, that from *Alhallowtide*, which is the beginning of *November* (and at which time all after growth of meadowes, are fully eaten, and cattell for the most part are taken up into the house) untill the end of *April* (at the which time grasse beginneth to spring and arise from the ground) you may water all your meadowes at your pleasure without danger, if you have water enough at your pleasure, and may spend or spare at your will;

yet

yet to doe it in the best perfection, and whereby your ground may receive the greatest benefit; you shall understand, that the onely time for the watering of your meadowes, is immediately after any great Fluxe of raine, falling in the Winter, any time before *May*, when the water is most muddy, foule, and troubled, for then it carrieth with it a soyle or compasse which being left upon the ground, wonderfully inricheth it, and makes it fruitfull beyond expectation, as daily is seene in those hard Countries where almost no grasse growes but by this industry: And here you must observe, that as you thus water one ground, so you may water many, having ever respect to begin with the highest, and so let the water passe out of one ground into another, untill it come to the lowest, which commonly is ever the most flat and levell, and there you may let the water remaine so long as you thinke good (as was before shewed) and then let it out into other waste ditches or rivers. And here you shall know, that this lowest ground will ever be the most fruitfull, as well because it lieth the warmest, moyst'est, and safest from stormes and tempests, as also because what soyle or other goodnesse this overflow of water, or the raine washeth from other grounds, it leaveth upon this, and so daily increaseth the fertility, from whence you shall gather, that at the first making of these meadow grounds you may bestow lesse cost of manure and other charges upon this lowest, flat, levell ground, than on the higher: and so by that rule also observe to bestow on the highest ground, and the highest part of the highest ground ever the greatest abundance of manure, and so as you shall descend lower and lower, to lay your meanure thinner and thinner, yet not any

part utterly unfurnished and voyd of Compasse, yet as before I said, you are to remember that these meadow grounds need not thus much use of meanure (having this benefit of water, and the first yeares dressing as was shewed in the beginning of this Chapter) above once in twenty yeares; nay it may be not above once in a mans life time.

And here also is to be considered, that the water which commeth from Clay or Marle grounds, being thicke muddy & pudly, is much better and richer then that which commeth from sand, gravell, or pibble, and so runneth cleare & smooth, for that rather doth wash away and consume the goodnesse of the ground, then any way adde strength thereunto.

CHAP. 15.

Of the enriching and dressing of barren grounds, for the use of Hempe or Flax.

Grounds ill for Hempe or Flaxe.

YOU shall understand there are two sorts of grounds which out of their owne natures utterly refuse to beare Hempe or Flaxe; that is, the rich stiffe blacke Clay, of tough, solid, and fast mould, whose extreame fertility and fatnesse giveth such a surcharge to the increase of the seed, that either with the rankenesse it runneth all into Bun and no Rind, or else the seed being tender, and the mould sad and heavy, it burieth it so deepe therein, that it can by no meanes get out of the same, but lies choaked and consumed without profit, the other is the most vilde and extreame barren ground, which by reason of the climate wherein it lies, is so exceeding steril and unfruit-

fruitfull that it will neither beare these seeds, nor any other good seed; and of these two soiles onely I purpose in this place to intreate, for with such soiles as will naturally and commodiously beare these seeds, I have nothing to doe, in that I have sufficiently written of them in mine *English Husbandman*, and *English Housewife*, which are Bookes onely for good grounds, but this for all such grounds as are utterly held without cure.

To begin then with the stiffe blacke Clay, which al beit be very rich for Corne, is most poore for these seedes, when you would reduce and bring it to beare Hempe or Flaxe, which neere unto the Sea Coast, is of greater price and commodity than Corne any way can be, especially adjoyning unto any place of fishing, in respect of Nets and other Engines, which is to be made of the same, and which being daily wasted and consumed, must likewise be daily replenished: You must first with a strong plow, fit for the nature of such land, plow up so much ground as you intend to sow Hempe or Flaxe upon, about the middest of *May*, if the weather be seasonable, and the ground not too hard: if otherwise, you must stay till a shower doe fall, and that the earth be moistned, then shall you hacke it and breake the clottes in small pieces, then with the salt Sea-sand, you shall sand it very plentifully, but if that be not to be gotten, and that you be very well assured of the naturall richnesse of the earth, you shall then sand it with the best red sand you can get or finde neere unto you, and upon every Acre of ground you thus sand with fresh sand, you shall sow three bushels of Bay salt, and then plow up againe the earth, sand and salt together, which would be done about the latter end of the yeare, as after *Michaelmas*, and

Blacke Clay for Hempe, &c.

and so let the ground rest till seede-time; at which time, you shall first before you plow it, goe downe to the low rockes on which the Sea beats, and from thence, with drags, and other Engines, gather those broad leaved blacke weedes, which are called Orewood, and grow in great tufts and abundance about the shoare, and these weedes you shall bring to your Hemp-land, and cover it all over with the same, and then you shall plow it againe, burying the weedes within the earth.

And herein is to be observed, that in any wise you must lay these weeds as wet upon the land, as when you bring them out of the Sea, provided still, that you adde no other wet unto them but the salt water, for so they are of all soyles or meamures whatsoever, the onely best and fruitfullest, and most especially for these seeds, and breed an increase beyond expectation.

When you have thus plowed over the ground, you shall then hacke it againe, and then sowe it with either Hempe or Flaxe-seede, which you please, and after it is so sowne, you shall then harrow it (and not before) and you shall be carefull to harrow it into as fine mould as you can, and this mould is likely to runne fine enough, as well by reason of the fertility, as also of the mixture; yet what clots you cannot breake with your Harrowes, those you shall breake with your clotting-Beetles, and such like tooles: then after the first great shower which shall fall after your sowing, you shall runne over your land thus sowne with your backe Harrowes, that is, with a paire of large Harrowes, the wrong side turned upward, to wit, the teeth turned from the earth, and the backe towards the

earth;

earth; and if neede be, you ſhall lay upon the Harrowes ſome indifferent heavie piece of wood which may keepe the backe of the harrowes cloſer to the ground, and ſo goe over all the earth, and lay it as ſmooth and light as is poſſible, without leaving the ſmalleſt clot that may be unbroken. Now if the ground be ſowne with Hempe, you ſhall not thinke of weeding it at all, becauſe Hempe is ſo ſwift a grower, and ſuch a poyſon unto all weeds, that it over-runneth, choaketh, and deſtroyeth them; but if it be ſowne with Flaxe or Line, which is a much tenderer ſeede, and bringeth forth more tender leaves and branches, then you ſhal watch what weeds you ſee ſpring up, and in their firſt growth plucke them up and caſt them away, till you behold your Flaxe or Line to be growne above the weeds, and then you may let it alone alſo, for after it hath once gotten height, it will not be over-growne with weeds.

poyſons weeds

Making of ill earth beare, &c.

Now touching the other ſoyle, which through the extreme barrenneſſe thereof, refuſing to bring forth any good fruite at all; you ſhall in all points dreſſe it as you dreſſe your plaine clayes, deſcribed in the ſecond Chapter of this Booke, beginning at the ſame time of the yeere that is then appointed, or (if more neceſſary occaſions hold you) if you beginne later, it ſhall not be amiſſe, and then at *Michaelmas* you ſhall plow it over the ſecond time, and meanure it with the Sea weedes, and ſo let it lie at reſt till *March* (which is ſeed-time) and then plow it againe, and meanure it with the Sea weeds againe, and after the plowing, you ſhall hacke it, and if in the hacking you finde the earth ſtiffe and tough, then you ſhall harrow it before you ſowe it, then ſowe it and harrow it againe, breaking the earth ſo ſmall, and laying it

ſo

ſo ſmooth as poſſible you can, uſing the helpe both of the clotting beetles and all other tooles which may be availeable for breaking the earth, and making the mould as fine as any aſhes, then after the firſt great ſhower of raine, perceiving the ground to be well moyſtned, you ſhall inſtead of the backe harrowes (which upon this earth may be too light) take the great rouler which is deſcribed in the Booke of the *Engliſh Husbandman*, being a great round piece of Timber of many ſquares, drawne either by Horſe or Oxen, but a ſingle Horſe is beſt, both in reſpect of much treading the ground, as alſo for the ſwift going away or drawing of the ſame: for the ſwifter it is drawne, the better it breaketh the ground, and the lighter it leaveth the mould: and with this rowler you ſhall runne over and ſmooth your ground very well, leaving no clot unbroken, and ſo let it reſt.

Weeding. As for the weeding of this ground, you ſhall not reſpect it at all, for naturally it will put up no weede, the very ground of it ſelfe being a very great enemy thereunto, nor ſhall you need to dreſſe this ground in the forme before ſaid, above once in eight or ten yeares: onely every ſeed time when you plow it (as you ſhall not need to plow it at any time, but ſeed-time onely) you ſhall before the plowing, cover or meanure the Land with the ſea-weed before ſpoken of, which will give ſtrength enough to the ground, without any other aſſiſtance.

CHAP.

CHAP. 16.

The manner of stacking of all kind of Graine or Pulse with greatest safety, and least losse.

IN these barren and hard Countries, of which I have formerly written, all sorts of buildings are exceeding costly and scarce, both in respect of the clime, which is commonly most extreame cold, mountainous, and much subject to storme and tempest, as also through the great want of Wood and Timber, which in those hard soiles doth hardly or never prosper; and therefore in such places building must be both small and deere, so that it will be very hard for the Husband-man to have house-roome for all his Corne, but that of necessity he must be enforced to stacke much, or the most part of his Corne without the doores, which albeit it be a thing very usuall in this Kingdome; yet is it in many places so insufficiently done, that the losse which redounds thereby (partly by the moysture of the ground, which commonly doth rot and spoyle at least a yard thicknesse of the bottome of the stack next the ground, and partly through Mice, Rats, and other vermine, which breedeth in the stacke, doe eate and devoure a great part thereof; as also through many such like negligent causes) is greater then a good Husband may with his credit bee guilty of, or a profitable Husband will by any meanes suffer to be lost so negligently.

To shew then the manner how to stack or mow your Corne without the doores, in such sort, as neither the ground

ground ſhall rot it, nor theſe vermines deſtroy it, nor any other loſſe come to it by way of ill husbandry, you ſhall firſt cauſe foure pieces of timber, or foure ſtones to be hewed broad and round at the nether end, like the faſhion of a Sugar-loafe, or this figure.

And theſe pieces of wood or ſtone ſhall be in length three foote or thereabout, and in compaſſe or bredth at the bottome, two foote, or a foote and a halfe, and at the top not above one foote; theſe foure pieces of wood or ſtone you ſhall place in your ſtack-yard, or other convenient place neere your thraſhing-floore, and you ſhall place them foure ſquare, of an equall diſtance one from another, then you ſhall cut out foure ſmooth boardes of two inches and a halfe thicke at the leaſt, and full three foote ſquare every way, and theſe boards you ſhall lay upon the heads or narrow tops of theſe ſtones or pieces of timber, according to this Figure.

Then

Then ſhall you take ſtrong over lyers of wood, and lay them foure-ſquare from one board to another, according to this Figure.

And then upon thoſe over-lyars you ſhall lay other ſmaller poles cloſe one by another, & then upon them you ſhall mow or ſtacke all your Corne, whether it be

Wheate,

Wheate, Barley, Oates, Peaſe, or any other kinde of graine, and be ſure if you make your ſtacke handſome and upright, which conſiſteth in the Art and workmanſhip of the workman, you ſhall never receive loſſe in your Corne, for the raiſing of it thus two or three foote from the ground will preſerve it from all moyſture or hurt thereof, and the broad boards which cover the foure ground poſts will not ſuffer any mice or other vermin to aſcend or come into the ſame.

Now for the manner of laying your Corne into the ſtacke, you ſhall be ſure, to turne that part of the ſheafe where the eares of the Corne lie ever inward into the ſtacke, and the other which is the ſtraw end, you ſhall ever turne outward, and by that meanes you ſhall be aſſured that no flying fowle, as Pigeons, Crowes, and ſuch like, can doe you any hurt or annoyance upon the ſame. Laſtly, you ſhall underſtand, that you may make theſe ſtackes either round, ſquare, or long-wiſe, yet round is the ſafeſt, and if you doe make them long-wiſe, then you ſhall ſet them upon ſixe ground poſts, or eight, according to the length and proportion you would have it, and after your ſtacke is made, you ſhall then thatch it very well to keepe out the wet; alſo if when you doe ſtacke your Wheate, you doe top your ſtacke with Oates or other courſe graine, it will be ſo much the better, and the Wheate will lie in greater ſafety, for no part of a ſtacke well made, eſpecially a round ſtacke, will ſo ſoone take wet or hurt, as the top thereof.

CHAP.

CHAP. 17.

The diseases and imperfections which happen to all manner of Graine.

ALbeit the manner of stacking and laying up of Corne or Graine in the forme before shewed, may to every one give an assurance for the safe and profitable keeping thereof as long as it endureth therein, and abideth in the eare, yet because divers necessities may compell the Husbandman to thrash out his Corne, as either for present use of Straw, Chaffe, Garbage, or other commodities needfull unto him (as the season of the yeere shall fall out) I thinke it most necessary in this place to shew how all manner of Graine and Pulse, of what nature soever may most safely and profitably be kept from all manner of annoyances, or corruptions whatsoever, being a worke of that utility and goodnesse, that not any belonging to the Husbandman doth exceed it: Nor shall it be sufficient to shew the offences and diseases of Graine with their cures and healthfull preservations, whilest it is in the Husbandmans possession, but also whilest it is in the earth, and at the mercy of cold, heat, moystnesse or drinesse, and not onely subject to the malignant influences of Starres and Planets, with the increasing and decreasing of the Moone and her operations: but also of divers other hurtfull Vermins; as Birds, Wormes, Pismires, Dorres, Snailes, Moales, and other such like: some whereof consume and devoure the graine ere it sprout: others in sprouting, when the kernell is rotten and turned to sweet substance, and

other after it is sprouted by devouring the first tender leaves before they have strength to appeare above the earth, being, as it were, but soft white threads, not changed into the strength of greene, because the aire and Sunne hath not yet look'd upon it.

Crowes, Pigeons, and Birds.

To beginne then with the first enemies of Corne or Graine, after it is throwne into the earth, there is none more noysome than *Crowes* and *Choughes* and other smaller birds, which flocking after the seedesman, will in a manner, devour and gather up the graine as fast as it is sowne; for as according to the old saying, *That many hands make light worke*; so many of their mouthes (being creatures that ever flie in flocks together) and their much nimblenesse in devouring, soone rob the earth of her store, and deprive the labouring Husband-man of very much profit, and the graine which these creatures doe most consume, is all manner of white Corne; as Wheate of all kinde, Rye and Oates, as also Hemp-seed, Line-seed, Rape-seed, and such like: Neither are they only offensive, during this time of sowing, but also after it is sowne and covered, digging it with their strong bills out of the earth, and so making the waste greater and greater.

The Cure.

The prevention or cure of this evill, is divers, as the affections of people, and customes of Countries doe instruct them, for some (especially the *French-men*) use when they sow these graines or seedes, first, to sprinckle it with the dregges or lees of their bitterest oyles, which when these devouring fowles doe taste, they refuse to doe any further hurt: Others use to sow Pigeons dung or Lime with their seede, which sticking unto the graine, the unsavourinesse thereof will make the fowle cast

up

up the graine againe, and leave to doe further hurt: But for as much as these medicines cannot ever be had, nor are ever wholesome for every ground, the onely best and safest meanes to prevent this evill, is to have ever some young boy with bow and arrowes to follow the Seeds-man and Harrowes, making a great noyse and acclamation, and shooting his arrowes where he shall see these devourers light, not ceasing, but chasing them from the land, and not suffering them at any time to light upon the same; and these servants are called Field-keepers, or Crow-keepers, being of no lesse use and profit (for the time) than any other servant whatsoever, nor is it sufficient to have these Field-keepers for the bare time of seede, onely whilest the graine is in sowing, but he shall also maintaine them till such time as you see the graine appeare above the earth, which for Wheate or Rye, because they are Winter-seeds, and so longer in sprouting, will aske a full moneth, for all other seeds which are sowne in the Spring or Summer, a fortnight is full sufficient; and this Field-keeper shall not faile to be in the Field an houre before Sunne in the morning, and so continue till halfe an houre after Sun-set in the evening; for at the rising and setting of the Sun, is ever done the greatest mischiefe, for then are all creatures most eager and hungry: and though the indurance may promise much paine and trouble, yet questionlesse the labour to any free spirit, is both easie and pleasant.

Also if your Field-keeper in stead of his bow and arrowes doe use to shoot off a Musket, or Harquebush, the report thereof will appeare more terrible to these enemies of corne, and the profit thereof will be a great deale more: for a shot or two of powder will Additions.

ſave more Corne than a weekes whooping and ſhouting; onely you muſt obſerve, that your Field-keeper uſe no Bullet or Haile-ſhot, for ſo hee may turne ſcarring to killing. Now touching the deſtruction which theſe creatures make of corne, after it is ſtack'd up; by tearing of the thatch, and digging holes and pits therein; to prevent that, you ſhall cauſe the Thatcher to ſcatter upon the Thatch, great ſtore of aſhes, of any kinde, or elſe Lime, that as the Pigeons or Crowes teareth up the ſtraw, the Lime or aſhes may ſparckle into their eyes and nares, which they will not endure: As for thoſe parts of the Stacke which cannot be thatch'd, as the ſides and ends; upon them you ſhall pricke divers ſcarcrowes, as dead Crowes, or dead Pigeons, or any other rags, or the ſhape of a man, made either of thumbe-ropes of Hay or Straw, or elſe ſome old caſt away apparell ſtop'd with ſtraw, and ſo fixed on the ſtacke; alſo in this caſe you may uſe Clapmills, or ſuch like toyes, which make a great noyſe: But to conclude the beſt prevention for theſe creatures (if you want ability to maintaine a Field-keeper) is to take long lines of packthread, and in them to knit divers feathers, of divers colours, eſpecially white ones, and with little ſtakes ſo to faſten them over the corne, that with every breath of wind, the feathers may dance and turne about, and the neerer that theſe blinkes or ſcars come to the ground (when the corne is new ſowne, ſo much the better it is, leſt the fowle finding a way to creepe under them, begin not to reſpect them; ſo that a hand or two from the ground is ſufficient, provided that the feathers and ſcars have liberty to play and move.

But if it be to ſave Corne in the ripening, that is to ſay,

ſay, a little before it be reap'd when the eare begins to harden, or when it lieth in ſingle ſheafe upon the land, for then fowle and birds doe as great miſchiefe, as at any other ſeaſon, it ſhall then be fit that you raiſe theſe lines or ſcars upon higher ſtakes, ſo as they may play as much above the eares of Corne as before they did above the earth; and amongſt theſe ſcarres thus made upon lines in ſundry parts of the field, you ſhall upon other ſtakes, place many other bigger ſcars, as dead Crowes, Pies, Gleads, Pigeons, or ſuch like, as alſo the proportions of man formerly ſhewed you, or any rags of cloth, being blacke, foule, and ugly, like bakers malkins, and than this there is no ſafer way for the defence of Graine or Corne from theſe birds; and ſuch like.

The next great devourers or conſumers of Graine, are Piſmires, or Ants, which, although it be but a little creature, yet it is ſo labourſome, that the Graine which they carry away or deſtroy by eating, amounteth to a great quantity, and the miſchiefe which theſe little Vermines doe, is after the Corne is covered in the ground, and before it ſprout, for they creeping in at the little chinkes of the earth, and finding the corne, either drag it out, or eate it; ſo that it cannot grow, and the Graine which they moſt hurt, is all manner of white corne, eſpecially your fineſt and ſmalleſt Wheate, for the ſkin or hull is thinneſt, and the kernell whiteſt and ſweeteſt: alſo to Barley they doe much hurt, eſpecially, that which is fulleſt and beſt, and likewiſe to Rye, Hempe-ſeed, Lin-ſeed, and Rape-ſeed; as for Oats, becauſe it is double hull'd, and alſo your great hole ſtraw Wheat & Polard Wheat which is thicke hull'd, their hurt is not ſo much to them, and unto pulſe

Of Piſmires.

nothing at all, becauſe they are too heavie, too thicke ſkinned, and too bitter in taſte.

The Cure. The beſt cure or prevention for theſe Piſmires, is to ſearch your Corne-fields well, eſpecially under hedges and old trees, and on the tops of Moale-hills, and if you find any beds or hills of Ants or Piſmires, preſently after Sun-ſetting with hot ſcalding water to drowne the beds or hills, or with wet ſtraw and fire to make ſuch a ſmoake upon them as may ſmother them to death: alſo if you meanure your Corne-lands with aſhes, lime, or ſalt ſand, you ſhall be well aſſured it will never breed Piſmires.

Of Dores. Next unto theſe, your Dores, or great blacke Clockes are vehement deſtroyers of all kinde of Corne both white Corne and Pulſe, whileſt it lyeth dry in the earth, and before it ſprout, for after it beginneth to rot, they doe no more touch it, and theſe Dores deſtroy it in the ſame manner, as the Piſmires doe, by creeping in at the ſmall crevies of the earth, and finding the Graine doe as long as it is dry, feed thereon, and though they are no hoarders, or gatherers together of the Graine keeping it in heapes in dry places, as the Piſmyres, and other Vermine doe, yet they are great feeders thereon, and that continually; beſides, they will ever chooſe out the fulleſt and beſt Corne, leave the leaner, whereby they doe the Huſbandman a double injury, as firſt, to devoure, and then to devoure but the beſt onely.

The Cure. The cure or prevention for theſe Dores, or blacke Clockes, is in Seed-time to make great ſmoakes in your Corne-fields, which will preſently chaſe them from thence, for they are the greateſt enemies that may be to all manner of ſmoake: but if that be not ſufficient,

sufficient, then immediately before you sow your Corne, you shall very lightly sow your land with sharp Lyme, and whensoever the Dore shall find the smell, or taste thereof, presently he will depart, or if he eate of the Graine that toucheth the Lyme, it is as present poyson unto him, and there he dyeth.

After these, your Field-Rats and Mice are very vehement destroyers of all manner of Graine or seede before they sprout, especially all sort of Wheat, and all sorts of Pulse, because for the most part those kinde of Graines in many soyles are sowne under furrow, and not harrowed, so that the furrowes at first lying a little hollow, these Vermines, getting in betweene the earth and them, will not only devoure and eate a great part of the Graine, but also gather together great heapes thereof into their nests, as is often seene when at any time their nests are found, some having more, some lesse, according to their labours: And albeit in other soyles where the Graine is sowne above furrowe, and so harrowed in, and laid much more close and safe, they cannot doe so much hurt as in the former, yet even in these they will with their feet digge out the Corne in great abundance, and though in lesse measure, yet doe hurt that is insufferable; so that to conclude, neither Rye, Barley, Oates, nor any other smaller and more tender seedes are free from their annoyance and destruction. Of Field-Rats and Mice.

Now the cure and prevention for these Field-Rats, & Mice, are divers, according to the opinions of divers authors, and divers of our best experienc'd Husbandmen: for some use in the Dog-daies, or Canicular daies when the fields are commonly bare, to search out the holes and nests of these Rats and Mice, which The Cure.

are easily knowne, being little round holes in the earth made so round and artificially, as if they were made with an Auger, no bigger than the body of the creature that was to lie in it: and into these holes they use to put a few Hemlocke-seeds, of which, when the beast tasts, it is present death unto them: Others use to sprinkle upon the land, *Hellebore* or neesing-powder, mixt with *Barley-meale*, of which the Mice and Rats will greedily feed, and it is deadly bane and present death unto them. Lastly, (and which is the best medicine) if you take a good quantity of ordinary greene *Glasse*, beaten also to powder, and as much *Copporas* or *Vitriall* beaten also to powder, and mixe them with course *Honey*, till it come to a paste, and then lay it in the holes and most suspicious places, and it will neither leave Rat nor Mouse about all your fields, but suddenly destroy them.

Of Wormes. The next great destroyers of Corne and Graine, are Wormes, and they destroy it in the sprouting, then when the ground hath rotted it, and the white or milkie substance breaking open the upper huske, shooteth forth in little white threads at both ends, upon which, whilest it is so moyst and tender, the Worme feedeth extremely, and so devouring up the substance or sperme, is the cause the Corne cannot grow or get out of the ground, and these Wormes being, as it were, the maine citizens within the earth are so innumerable, that the losse which is bred by them is infinite.

The Cure. Now the Cure or prevention for these Wormes, is diversly taken: for some Husbandmen use, but only to strike into the plow rest, and under the lowest edge of the shelbord certaine crooked spikes of iron of great nailes halfe driven in, and turned backe againe, with which

which as the plow runnes tearing in the ground, and turnes up the furrow, those pieces of iron kill and teare in pieces all such wormes as are either within or under the furrowes that the plow casts up, and this is sure a very good husbandly practice, but not sufficient for the destroying of such a secret hurtfull vermin which is so innumerable, and lies so much concealed; therefore more curious husbands use besides this helpe of the plow, to take Oxe-dung, and mixe it with straw, and then to burne it up in the land, making a great smoake over all the land, immediately before you plow it for seed, and it is thought that this will kill all the wormes which lie so high in the earth, as to hurt the Corne; Others use before they make either the mixture or the smoake, to wet the straw in strong Lye, and then adding it to the dung, the smoake will be so much the stronger, and the wormes killed the sooner, or if you sprinkle strong Lye upon your seed before you sow it, there is not any worme that will touch the graine after: Also, if you take Hempe and boyle it in water, and with that water sprinkle your seed before you sow it, not any worme will come neere to touch it.

Yet it is to be observed in this rule of wetting your seed-corne, that by no meanes you must wet your seed-Rye, for it is a Graine so warme and tender, that it will neither endure cold, wet, nor stiffe ground, insomuch that the Plow-man hath a Proverbe, That Rye will drownd in the Hopper, that is to say, it must neither be sowne on wet ground, nor in a wet day, since present shewers are apt to destroy it: lastly, it is thought, that oft plowing of your ground in the wane of the Moone, is a very good meanes to destroy wormes. Touching that practice which many use, to gather

Of Rye not to be wet.

gather the wormes from their lands at Sunne-rise, in bright dewie mornings, and Sun-set, when the wormes couple about the earth, I hold it more fit for small Gardens, than large Corne-fields.

Of Snailes. The next great destroyer of Corne are Snailes, and they destroy it after it is sprouted, feeding upon the tender white threads and sions which start from the seed, and would rise above the earth, being the stemme or stalke on which the eares should grow (were it not devoured and eaten up by these Snailes, and such like vermine) as soone as it begins to peepe up, or, as it were, but to open the earth, whereby it is driven back, and forced to die in the earth: for these creatures sucking upon the tender sweetnesse, deprive it both of life and nourishment.

The Cure. The cure and prevention for this evill, is to take the soot of a Chimney, and after your Corne hath beene sowne a weeke or ten daies, or within two or three daies after the first shower of raine which shall fall after the Corne is sowne; you shall sow this soot of the Chimney thinly over the land, and not a Snaile will endure to come thereon: Others use, especially in *France* and those more fertile Countries) to take common Oyle lees, and after the Corne hath beene sowne, and is ready to appeare above ground, to sprinkle it all over the Lands, by which meanes, no Snaile or such like creature wil endure to come nere the same.

Of Grashoppers. The next great destroyer of Corne is accounted the Grashopper, and he also destroyeth it after it is sprouted, and appeareth above the ground, as the Snaile doth, but somewhat more greedily, for hee not onely feedeth on the tender and white strings, but upon the first greene leaves that appeare also; by which meanes the

the Corne is not able to ſpring or bring forth a ſtemme or ſtalke to beare the eare upon; or if it doe put forth any, yet it is ſo ſmall, weak and wretched, that the eare growing on the ſame, is withered and leane, and the graine dry and blaſted, and no better than Chaffe; nor is there any Corne that ſcapeth the deſtruction of the Graſhopper, for he generally feedeth on all: firſt, on Wheat and Rye, becauſe they are the eareliest, then on the Barley and Oats: and laſtly, on Pulſe, upon whoſe leafe & bloſſome he feedeth, whileſt the firſt is ſweet and pleaſant, or the other greene.

Now the cure or prevention for theſe Creatures, is according to the opinion of ſome huſbandmen, to take Wormewood, and boyle it well in water, till the ſtrength of the Wormewood be gone thereinto, and then with that water, in the moneth of *May*, to ſprinkle all your Corne over when the Sun is riſing or ſetting: and not any Graſhopper will come neere, or annoy the ſame. Others uſe in ſtead of Wormewood, to boyle Centuary, and to uſe the water therof in the ſame manner as aforeſaid, and find an equall and like profit in the ſame, but it is moſt certaine, that any bitter decoction whatſoever, uſed and applyed as aforeſaid, will not leave one Graſhopper about your Fields, for any bitterneſſe is ſuch an enemy unto them, that they cannot live where they feele any taſte thereof. The Cure.

The laſt offence of living Creatures, belonging to Corne or Graine, are Moales, which not only feed upon it after it is ſprouted and ſpindled by eating up the roots thereof, and ſo conſequently by killing the whole Corne; but alſo by their digging and undermining of the earth, doe roote up the Corne, and deſtroy it in moſt wonderfull manner, for where they make their haunts, or are ſuffered to digge, there they will de- Of Moles.

ſtroy

ſtroy almoſt halfe an Acre in a day, neither make they choice either of ground or graine, for all grounds and grains are alike, if the ground be not too wet, or ſubject to inundation or overflowes (as for the moſt part corne grounds are not) for above all things, Moales cannot endure wet ground, or earth of too moiſt quality.

The Cure. Now the beſt cure or prevention againſt theſe creatures, is to find out their trenches and paſſages which are moſt plaine and eaſie to be knowne by the turning up of the new earth, and digging croſſe holes in the ſame, to watch either the going forth, or the comming back of the Moale, and when you ſee her caſt, to ſtrike her with an iron forke made of many graines, as eight or ſixe at the leaſt, and ſo to kill and deſtroy them; which ſtill is ſo generally knowne amongſt Huſbandmen, that it is become a trade and occupation amongſt them, ſo that it needs no further deſcription, and the rather in as much as for three or foure pence a ſcore, you may have any ground cleanſed of Moales whatſoever.

Now there be ſome others which have not this art of killing or catching of Moales, which only doe take Brimſtone and wet ſtinking ſtraw, or any thing elſe that will make a ſtinking ſmoke, and putting fire thereto, ſmoke all the places of their haunts, and by that meanes drive them all cleane away from the cornelands: many other practices they have, but none ſo good, certaine and probable as theſe already declared.

Offences from the influence of the heavens. Thus far I have ſpoken of thoſe offences which proceed from living creatures, I will now intreat of theſe which come and grow from the influence of the heavens, being malignant vapours, which ſtriking into the earth, doe alter the ſweete and pleaſant nouriſhment thereof, and change it into bitterneſſe and rottenneſſe,

where-

by the Corne is either slaine outright, withered and made leane and unkindly, or else the kernell turned to a filthy blacknesse, being bitter, dry, and dusty, like unto smoake, which the Husbandman calleth smuttinesse or mildewing commeth another way, as namely, by over ranknesse, or too much fatnesse of the earth, and this happeneth most commonly only to Wheat, for if blacknesse happen to any other Graine, it commeth of blastings, or other malice of the Starres; for ranknesse of the ground in Barley, Rie, or Oates, only makes them lie flat to the ground, the stalke not being able to support the multiplicity of the eares, and so by that meanes the Graine wanting his true nourishment, growes light, withered, and of no validity; now that this is most easie to be found out, the ranknesse of the growing Corne, rising, as it were, in close bundles together, and the deepe blacknesse of the greene blades, will with small travell shew you.

Of smuttinesse and mildew.

This to cure and prevent, it shall be good before you sow your Graine, to sow your land lightly over with chalke, for that will abate his over-ranknesse.

The Cure.

There be other malignant qualities which proceed from the influences of the Heavens, or rather from the qualities of the Planets or Elements which doe many dangerous hurts unto Corne, as namely the Haile, the Lightning, the Thunder, and the Planet-stroke or Blasting, for all which the ancient Husbandmen have suggested severall Cures, as namely, for the Haile, to plant the white Vine, or sticke the branches thereof in the Corne-field. For the Lightning, to close a hedge-Toade in an earthen-pot, and burying her in the Corne-field, or to hang up the feathers of an Eagle, or a Seale-skinne, or to plant Lawrell therein: For the

Additions.

Thunder,

Thunder, to ring Bells, to ſhoot off great Ordinance, or to burne ſtinking weeds in the Corne-field: and for Blaſting, to take the farre horne of an Oxe, and mixing it with dung, to burne it in the Corne-field, or to take the branches of the Bay-tree, and to plant them in the Corne-field: But in as much as all theſe, and many other the like, ſmell rather of conjuration, charme, or exorciſme, than of any probability of truth; I will neither here ſtand much upon them, nor perſwade any man to give further credit unto them, than as to the vapours of mens braines, which produce much many times, out of meere imagination; and ſo I will proceed unto thoſe things which are of farre greater likelihood.

Of Froſts. The next evill which happeneth unto Corne or graine, is that which commeth by froſts and ſharpe nipping colds, which ſtarving the root, and binding up all nouriſhment, maketh the Corne dry, wither, and never proſper; and then the violence of the froſts, here is nothing more bitter to Plants and ſeeds, for ever Raſor-like, it cutteth the veines and ſinewes in pieces, and as ſharpe Needles pricketh the heart of every growing thing: for as the fire is moſt hot, when it rageth, burneth and conſumeth all things, ſo the froſt is moſt cold when it continueth, ſtarveth and choaketh, or ſtifleth whatſoever it imbraceth.

The Cure. Now the Cure or prevention for thoſe evills which doe happen to Graine by theſe great Froſts, is as ſome Huſbandmen ſuppoſe, to cover the land over when it is ſowne, with aſhes, others ſpread ſtraw or rotten litter upon their Corne, and not any of them but is ſufficient to prevent the worſt injury that the froſt can doe.

The

The most malignant quality which offendeth grain, is myst and fog, which being naughty vapours drawne from the infected parts of the earth, and falling upon the Corne, doe not onely make the graine leprous, but also infecting the better earth alter the kindly nourishment thereof, and, as it were, distilling corruption in the veines, makes all that depend thereupon most leprous and unwholesome, and thereby altereth the quality, quite turning sweetnesse into bitternesse, fulnesse into emptinesse, and goodnesse into badnesse, to the great losse of the Husbandman, and the much disreputation of the ground. Mysts & Fogs.

Now the Cure and prevention of this evill, according to the opinions of all the best Husbandmen, is to take weeds greene, the twigs of brambles, and other brush wood, wet straw, or any such like stuffe, and binding them in great bundles, to put fire thereto, making a great and violent smoake, and then taking the advantage of the wind, to walke up and downe the field, and smoake it, which is thought a certaine remedy to take away those inconveniences which happen by violence and poyson of these mysts and fogs. The Cure.

Now to conclude the diseases and infirmities which happen to Corne whilest it is in the field, there is not any formerly spoken of, more dangerous, or of vilder quality, than the reaping, mowing, or gathering in of Corne, wet, or too greene, and unhardned, for such moysture, when the Corne is either sheafed up close together, or stack'd or mowed up, forthwith gathereth heat, and either setteth the Corne on fire, or else the moisture being of lesse quantity, and not apt to flame, yet it corrupteth the graine and straw, and breedeth a stinking mouldinesse or rottennesse about it, so that Corne reap'd wet.

the

the graine either becomes dung and dirt, or atleast so stinking and unsavory, that it is good for no use or purpose, as is daily seene where careless husbands gather in their grain without respect or government, making the old Proverb good, that haste ever brings waste.

The Cure. The cure and prevention of this evill, is the well husbanding and managing of the harvest, as first, with a carefull and well judging eye to looke upon your Corne, and to know by the hanging downward of the eare (looking, as it were, backe to the ground) and by the hardnesse of the Graine, whether it be ripe or no; then to looke into the cleannesse of the Corne, as whether it be full of greenes, as grasse, weedes, and such like: or cleane of it selfe, without any mixture: if you find there be many weedes mixt with it, then you may reape it so much the sooner, though the kernell be not so well hardened as you would wish, and above all things, have a care, never to sheare Corne in the raine or wet, no, not so much as with the mornings or evenings dew upon it, but even in the heat and brightnesse of the day. Then having reap'd your Corne so full of grasse and weeds, you shall by no meanes sheafe it, but spreading it thinne in the Sunne, let the grasse wither all that day; which when you perceive to change colour, and grow dry, then bind it up in sheafes, and let it lie single a day, that the wind and Sunne may get into it, and dry the greenes more sufficiently; then lay it in stoucks of six or eight sheafes apiece, and in those stoucks, turne the eares so inward, that the other bigger ends may defend them from all raine, wet or dew that may fall upon them; then a day or two after, lay them in stoucks of twenty or of foure and twenty sheafes apiece, and in those stoucks let them take a sweat, then breake them

open

open in a bright Sun-shine day, and letting the aire passe thorow them to dry them, forthwith leade the graine home, and house it, or stacke it in such sort as was shewed in the former Chapter, and be sure the graine thus ordered and dried, can never take hurt: but if the season of the yeere fall out so extraordinary evill, and full of wet, that by no meanes you can get your Corne dry home (which although it be seldome seene, yet it is possible to be seene) in this case you must bring it home as well as you can, and having your Kilne well ordered and bedded, you shall lay as many sheaves thereon, as it can containe, and turning and tossing them over a very gentle fire; by slow degrees dry them very perfectly as neere as you can, with no greater a heate than that which the Sunne giveth, and then mowe and stacke them up at your pleasure, for the aire will sweeten them againe, and take away all smell of smoake or other annoyance: onely observe not to stacke them up whilest the fire or heate is in them, but when they are cold, and so they will be as sweet as may be.

Of Corne Wash'd.

Now it is not amisse that I speake here a word or two of wash'd Corne, or the washing of Corne; True it is (as before I have written) that all sorts of Wheat whatsoever are subject, either by the rankness of the ground, blasting, or else mildewing, to a kinde of filthy sooty blackness, as is already shewed; and this sooty Corne is taken two waies, generally and particularly: generally, if the whole land be stricken, and no corne saved, but all spoyled, which is called mildew'd: or particularly, where but some certaine eares are struck, or some certaine part of the graine, as when it is blacke at both ends, yet full and sound in the middest, and

this is called smutch'd Corne, being disfigured in part, and not in all. This smutch'd Corne which is stricken here and there, if the blasted eares be not culled out from the other, (which to doe is an husbandry exceeding good and very worthy) when it commeth under the flayle, the dust of those blacke blasted eares will so foule all the rest of the corne, that it will looke blacke and ill-favoured, and so become unserviceable and unmarketable; for the blasted corne is both bitter and unwholesome: In this case you must of force wash this corne, and you must doe it in two or three waters, till you see all the blackenesse quite gone; which done, then draine away your water cleane, and laying the corne on faier winnow-clothes, or coverlids, lay it in the heate of the Sunne, and so dry it againe till it be so hard, that it will grind: But if the time of the yeere will not serve for the Sunnes drying it, then you shall dry it on a Kilne with a very soft and gentle fire; and then coole it in the aire to recover the sweetnesse againe, and then the corne is as serviceable as any other, onely for seed it will by no meanes serve, both by meanes of the blasting, which makes the kernell imperfect at at both ends, where it should sprout, as also the too much drying thereof, by which it is so much hardened, that the ground hath not strength to resolve it, therefore it is the office of every husbandman when he chooseth his seed-corne, to eschew by all meanes this wash'd corne as a graine that is lost in the earth, and will by no meanes grow.

To know wash'd corne.

Therefore that you may know wash'd corne from all other corne, and so not to be cozened by any deceit in the ill Husbandman, you shall take it up into your hand, and if the corne looke bright, cleere, and shi-

ning,

ning, being all of one entire colour without change or difference, then be sure the corne is unwash'd and perfect.

But if you find it looke whiter at the ends than in any other part of the Corne, and that the whiteneſſe is blacke, and not ſhining, ſo that there is a changeable colour in the corne, then be aſſured, that the Corne is waſh'd, and then by no meanes apt for ſeed or increaſe.

Againe, put three or foure graines into your mouth and chaw them, and if then the taſte be ſweet and pleaſant, and grind mellow and gently betweene your teeth, then is the corne not waſh'd, but if it have a bitteriſh, or flaſhie raw taſt, and grind hard betweene your teeth, or with much roughneſſe, then hath the Cerne beene waſh'd & dri'd againe, and is not good for ſeed: alſo when corne is more than ordinarily moiſt, or more than ordinarily dry, both are very ill ſignes, and ſhew either imperfect corne, or imperfect keeping, for the beſt and good corne indeed ever holdeth an indifferent temperature betwixt drineſſe and moiſture.

CHAP. 18.

How to keepe all manner of Graine, either thraſh'd or unthraſh'd with leaſt loſſe, the longeſt time, and how to preſerve it from all infirmities and Vermine in the houſe or garner.

TO proceed to the keeping and preſerving of Corne and Graine, it is to be underſtood, that it is to be done two ſeverall waies; that is to ſay, in the Eare, and out of the Eare, in the Stacke when it is joyn'd with the Straw and Chaffe, or in the Garner, when it is cleanſed & dreſſed.

Keeping of corne two-fold.

Touching the keeping of Corne in the Eare or in the Stacke, there is no better or safer way than that already described in the sixteenth Chapter, being free from all offences whatsoever that can come to hurt it.

Keeping corne in the eare or in the chaffe.

Now there be others that cut off the Eares of their Corne, and then put them into great Chests or Hutches of wood, (such are very frequent, and much in use in *Ireland* and other Countries where warre rageth) and so keepe it sweete and good many yeeres: Others use to beate it out of the Eare, but not separate it from the Chaffe, and then laying a leare of the Straw more than a foot thicke, to lay a good thicke leare of the thresh'd Corne, then another leare of Straw, and so a leare of thresh'd Corne, and thus leare upon leare, till you have made up your stacke in such proportion as you shall thinke convenient; and this will keepe all kinde of Corne, or Graine, or other Seedes, sound, sweete, and fit for any purpose, at least a dozen yeeres, or more, as some have supposed, without either too much drying, withering, moystening, or moulding; and sure this is a very excellent way for the storing up of much Corne in a very little roome, and may as well be done with Corne as with Straw: onely it is not to be done in Barne nor House, because Mice, Rats, and other kind of Vermine, will worke much destruction thereupon; but on a Stacke or Hovell made and proportioned in such forme as was shewed before in the sixteenth Chapter, and so it will stand safe without all annoyance, as long as it shall please the owner to keepe it; sure I am, it will last thus fully twelve yeeres, yet some Authors affirme it will last fifty yeeres, but that is a space of yeeres beyond my triall.

Touching

Touching the keeping of Corne after it is thresh'd and dreſt, it is divers waies to be done, as by ſtouge or place of leare, as garners, hutches, and ſuch like: by labour and induſtry, as with the ſhovell: or elſe by device or medicine. Keeping of corne out of the Eare, or dreſt.

For Garners, they be made divers waies, according to the nature of the Countrey and cuſtome of the people. Of Garners.

Some are made with clay and lome troden with haire, ſtraw chop'd, and ſuch like: but theſe are the worſt, and doe ſooneſt corrupt Corne, for although they are warme, which is a great preſervation to corne, yet they yeeld duſt, and from that duſt is bred Fleas, Mytes, Weavels, and other vermin, which ſpoile corne, and make it eaſily rot.

Others are made of ſtone and lyme, but they are ſubject againſt wet weather, to yeeld forth a moyſt dew which corrupteth and rotteth corne.

Others are made of Bricke and Lyme, and they are very good againſt the Weavell, and other ſmall vermine, but the Lyme is ſharp, and ſo conſequently very unwholeſome for all manner of Graine. The beſt Garner then that can be made to keepe all manner of graine in, is made of plaſter, burn'd and brought into morter, and ſo raiſing it up with the help of ſmall ſtones hidden and placed in the midſt of the wall, to make both the inſide, and the outſide of the Garner of ſmooth plaſter, no ſtone being ſeen but hidden at leaſt two fingers thick on each ſide, and all the bottome alſo muſt be made of plaſter; for no floore keepeth corne ſo well, of what kind ſoever it be, and theſe Garners would be placed as neere as you can to the backes or ſides of chimnies, or as neere the aire of the fire as you can conveniently, for as there is nothing more cold

than plaſter, yet it is ever ſo dry and free from moyſture, that with no change of the aire or weather it relenteth, but keepeth the Corne ever in one ſtate of goodneſſe, whilſt the warme ſtanding thereof is ſuch a comfort in the Winter, and the naturall cooleneſſe of the thing ſo ſoveraigne in Summer, that the Graine ever abideth in one ſtate without alteration.

Of Hutches. Now for Hutches or great Cheſts, Byngs, Dry-fats, and ſuch like, they are made of old, dry, and well ſeaſoned Oake-boords, plained, ſmooth, and cloſe joyn'd and glewed together, with covers and lids made alſo very cloſe, whereby little or no aire can come in: Some of theſe great Byngs or Hutches made of dry boords are made open, and without covers, but they are not ſo good, for the aire cooling the upper part of the Corne, and the middle part ſweating, breedeth corruption or muſtineſſe, which hurteth and ſpoyleth the Corne: Beſides, they are ſomewhat too warme, and thereby make any greene Corne apt to corrupt and ſmell.

Touching the uſe of Garners and Hutches, they are principally to keepe Malt after it is dryed, or Barley which is for the uſe of bread or meale: and here is to be noted, that the beſt manner of keeping Malt, is to keepe it in the Corne, that is to ſay, in the duſt and other filth which commeth with it from the Kilne, as thus: when firſt you lay your Malt on the Kilne to be dryed, you know there is at one end a certain ſprout, or ſmall threads which growes from the Corne, and it is called the come, which by the rubbing and drying of the Malt falls away, and leaves the Corne cleane and ſmug of it ſelfe, and when you trim and dreſſe up your Malt for the Mill, is winnow'd and cleanſed away: this you ſhall preſerve and put all together in your Garner

or

or Hutch, which will ſo mellow and ripen your malt, that in the ſpending thereof a pecke will goe further than a pecke and a halfe kept of a contrary faſhion, and although ſome are perſwaded that this come or malt-duſt, is a great breeder of the Worme or Weavell, by reaſon of the much heate thereof, being indeed of the pureſt of the heart of the Corne; yet it is not ſo, unleſſe ſome dankneſſe or moyſture doe get to the Corne, and then it breeds Weavells in infinite abundance, and therefore by all meanes be ſure that your Garners and Hutches doe ſtand exceeding dry, and then there is no feare of the loſſe of corne, nor ſhall you need to dreſſe or winnow your malt but as you ſpend it.

Laſtly, here is to be noted, that although I here joyne Garners, Hutches, Cheſts, and Byngs together, yet I make them not all of equall goodneſſe: for the plaſter Garner is abſolutely the beſt of all, the cloſe Hutch or Cheſt next, and the open Byng laſt; yet any, or all ſufficient enough to keepe Malt, Barley, or ſmall ſeeds, divers yeeres without imperfection.

It is written by ſome of the ancienteſt Authours, that Wheat hath beene kept in theſe cloſe Hutches or Cheſts ſweet, the ſpace of fifty yeeres, yet I hold the rule ſomewhat doubtfull, both becauſe Wheat of it ſelfe lying ſo cloſe pack'd together, is apt to heate and ſweat, and that heat commonly turneth to faughtineſſe, and the ſweat to corruption; but that it may thus be preſerved from Wormes, Weavells, Mytes, and other vermine, breeding in Corne, it is doubtleſſe and infallible.

Now for the preſervation of Wheat, which is the moſt principall Graine, of greateſt uſe, and greateſt price, and therewithall moſt tender, and apteſt to take hurt: To preſerve Wheat.

hurt: the experiments are divers, as mens fancies and practises have found out; for some Husbandmen hold opinion, especially the *French* and *Spanish*, that if you take the lees of common oile, (so it be sweete) and sprinkle it upon your Wheate as it lies, either in the garner, or upon the floore, that it will preserve it from all corruption and annoyance whatsoever, nor doth it save Wheate onely, but all other manner of Graine whatsoever; nor doth preserve corne alone from mischiefe, but if corne by casualty be tainted or hurt, it doth recover it againe, and brings it to the first sweetnesse; and if either Wormes or Weavels be bred in it, the oile presently kills them, and makes the corne from that mischiefe: as for smaller seeds, as Hempe, Line, and Rape, this oile doth not onely keepe them long and sound, but also feeds and nourishes them, and makes them better, either for the ground, or for use, either in the Mill or in Medicine. There be others that use to take Chalke, and beate it to powder, and then scatter it amongst their Wheat, when they put it into the garner, and have found that thereby their graine hath beene wonderfully preserved from all imperfection, and surely there is great reason for the same, because the drinesse of the Chalke drinketh up the moysture which sweateth from the graine, and is the first breeder of all putrefaction: also it cooleth and asswageth the immoderate heate which is ingendred in the corne, by reason of the packe and close lying together.

Againe, there be others which use to lay great store of Wormwood amongst their Wheat, which likewise preserveth it from all annoyances, especially from Wormes and Weavells, as also from Mice, Rats, and such devouring vermine; neither will the Corne cor-

rupt

rupt or grow naughty, as long as the Wormewood remaines amongst it: In *Italy* the carefull Husbands use to take a certaine dry earth or clay, called earth of *Olnithus* or *Cernithus*, and this earth they beat amongst their Wheat, and then put it into the garner or hutch, and it will keepe it sound and sweet divers yeeres together; then when they have occasion to use it, with small reeing-sives to dresse it from the Corne, and so preserve the dust, which will last and serve you many yeeres together, even almost an age, as some have reported, and is at this day to be seene in many parts of *Italy* and other places.

Againe, I have for mine owne part seene in the Islands of the *Azores*, certaine very great and large caves or pits made under the earth, of the fashion of a *Spanish* earthen Jarre, that is to say, great and spacious in the midst, and narrow both at the top and bottome, like a brasse-pot, or great glasse-viall, and made as smooth within as may be, and in these caves or pits, they first lay chaffe, and then their thrash'd Wheat, filling it up full to the top, or within a handfull thereof, which they fill againe with chaffe, and then closing the top with a broad stone, they cover it over with earth, so close and unperceivable, that you may walke or travell over it without any suspicion; and for mine owne part, I have my selfe digged up many of these pits, and found great store of Wheat, both in the high-waies, and other most insuspicious places, and surely it is thought, and experience in those places makes it good, that in these caves or pits you may keepe Wheat as long, if you please, as *Pliny* speaketh of, which is an hundred, or an hundred and twenty yeeres without hurt or putrifaction, either of heate, moysture, Wormes, Weavells

or any other vermine whatsoever which consumeth or devoureth Corne; yet how I may recommend this experiment to our Nation, I am uncertaine, because the much moisture of our climate, and the cold rawnesse thereof promiseth a contrary effect; for the great enemies unto graine, are violent cold and moysture, and with us it is very difficult to make any cavernes under the earth, but they must be subject unto both: therefore onely to those which live in hot sandy Countries, high and free from springs or waters, or in dry and rockie grounds, where these mynes or hollow places may be hewed out, as in a maine and firme quarry, I recommend the tryall of this practice, with this assurance, that where the ground is fit for this purpose, as in any of your sand grounds, or gravelly earths, as in *Norfolke*, *Middlesex*, *Kent*, and many other sandy climates; or in rockie situations, as in *Nottingham*, *Bathe*, *Bristol*, and such like, you may keepe your Wheat, good, sound, firme, and free from all annoyances, even as long as you shall please to keepe it, both without putrifaction in it selfe, or waste made by other devouring wormes and vermine: but if in a more moyst place, as in a clay, or other mixt earth, which ever is vomiting wet and dewish humours, you are forced to approve this experiment: then you must necessarily lime all your cave or hollow myne within, at least halfe a foot thick with a tyle shred, and plaster laid wall-like together, and then the plaster dawb'd at least three fingers thicke above all, and so you may keepe your Corne as safe and as sound as any hot soyle whatsoever, but without it your Corne will not endure a weeke without rottennesse, faughtinesse, moldinesse, and stinking.

To conclude, having shewed you all the most approved

proved and best experiments for the keeping and preserving of Wheat, there is none better, or so good as this poore silly plaine one which I will here deliver: And that is, first (as neere as you can) reape your Wheat at the change of the Moone, for Wheat which is so reap'd, is seldome or never subject to losse or putrifaction (being gotten dry, and in husbandly manner ordered and handled) because that celestiall body hath such a power and influence in the growth of Corne and Seeds, that as shee groweth so they grow, and as she waneth, so they abate and wither.

And truly for mine owne part, in my poore husbandry, I have made this observation, that I have reaped corne at the beginning of the wane (to mine eye and judgement) great, full, and bold (as the Plow-man calls it) and within few daies after, when it came to thrashing, I have found it most poore, hungry, and small corne: nor could I give, or find any other reason for the same, but that it was reap'd in an ill and most unseasonable time: for on the contrary part, I have ever found that corne reap'd upon the change, being ripe, full, and every way fit for the Barne (and the weather faire and dry above head) it hath never altered, but kept his first and perfect goodnesse, so that I cannot choose but in this case thinke the observation of the Moone to be a thing of great effect and validity, appointed by God as a second meanes for our help and profit: when therefore your corne is thus seasonably and well got, you shall thrash it, winow it, & dresse it so cleane as you can, then carry it up into your chambers, or lofts appointed for that purpose, and whose floores by all meanes I would wish to be cast of the best plaster; for boords are too hot, and clay is too apt to breed vermine: On this plaster-floore you shall spread your Wheat not

above

above a foot thicke at the uttermost, and so let it lie: observing once in foure, or in five daies at the most, with a large wooden shovell, to turne the Wheate quite over and over. And thus doing, you shall be sure to keepe it as sweet, sound and good, as when it first came into the barne: for neither can the heat, sweat, nor coldnesse offend it, the first being cooled and tempered by the opening and dispersing; the second dryed up by the aire which hath free recourse into it, and the last comforted by the labour and tossing of the shovell, casting it up and downe from one place to another, and though some curious Husbands may object, that this manner of keeping corne, drieth it somewhat too much, and thereby disableth it for some particular purposes, as for seed and such like; yet in that they are much mistaken; for this stirring and moving of Graine, is not a drying of it, but rather a great comforter and strengthener of it, dispersing backe into the Corne, those wholesome vapours which should doe it good (by way of communication and fellowship with the graine) and expelling those ill humors which sweating out of it would otherwise confound and hurt it, so that in conclusion for the true and long keeping of Wheat sweet, sound, and perfect, without losse or corruption, there is no way more safe or easie, than this last expressed, being of all other the best, although in shew it appeare sleight and triviall, as for the most part things of greatest moment in this nature doe; but to the judicious Husbandman I referre it, whose aime is at the worth and substance, not at the words and curious glosse, set forth in strange ingredients.

To preserve Rye.

Touching the keeping of Rie or Maslin, or as some call it munck-corne or blend-corne, being part Rie, and part

part Wheat mixed together, that which preserveth Wheat, will also preserve it, for they are Graine of like nature, onely the Rye is somewhat hotter and dryer, and therefore will endure somewhat more moysture; yet to speake particularly touching the preservation of Rye, there is nothing better than the Plaster-floore, and oft turning; the close Hutch is also exceeding good, so is the Pipe or Dryfat, but being once opened, and the aire entring into the Corne, except it be soone spent, it will soone putrifie, for though in the close keeping it last long, yet when it comes to the aire, it quickely receives taint. Lastly, for the profit in keeping of Rye, indeed there is nothing better than to ply it and tread it hard into hard vessells or barrells wherein salt hath beene much lodged, or other brine or salt matter: provided alwaies, that the vessels be sweet and untainted, no waies subject to saughtinesse, or other unsavory smels, from which there is no preservation.

Concerning the preservation & keeping of Beanes, which are indeed a more grosse and fatter graine than any heretofore written of, and out of the fulnesse of their substance, more subject to moisture and those dankish humours which corrupt Corne: the carefull Husbandman observeth two rules; first, not to thrash any Beanes or Pulse, more than for necessary use (as for the Stable or Mill) before it be midde *March*, at which time the Graine having taken a kindly sweat in the Mow, Stacke, or Hovell, is become so dry, firme, and solid, that no floore, wall, or other place of leare, can make it relent or give againe, (except great abuse and too moist keeping) for it is to be understood, that this sort of Pulse or Graine is of it selfe so exceeding moist, and apt to sweat in the Mow, that all Husband- To preserve Beanes.

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men endeavoure by no meanes to houſe it, or lay it within doores, but ſeeke to make it up in ſtackes and hovells without doores; not ſo much that houſe-roome is wanting, as that the benefit of the Sunne and aire which pierceth through the ſame, dryeth and ripeneth the Corne in ſuch kindly manner, as maketh it as ſerviceable as any other: and indeed, the firſt invention of ſtackes, hovells, reekes, and ſuch like, did not ſpring ſo much from the want of houſing, as from the good and profit which the Huſbandman found to accrue to this kinde of Graine only by reaſon of laying it abroad; for it is certaine, that Beanes and Peaſe neither grow together, nor ripen together, but put forth their increaſe one after another; for you ſhall ſee upon one ſtalke bloomes, ſwads, and ripe cods: So likewiſe in the gathering of Pulſe (when it is reaped from the ground) you ſhall ſee ſome dry and withered, ſome ripe, ſome halfe ripe, ſome abſolutely greene, and as but new in growing.

Now all theſe muſt be reap'd together, and if you ſtay them in the field till all be of like drineſſe, queſtionleſſe the oldeſt will ſhake and ſhed upon the ground before the youngeſt be ripened, and what that loſſe will redound to, every Huſbandman can judge; ſo alſo to houſe and mow up in cloſe mow, the dry Pulſe with the greene, ſurely the greene cannot choose but inflame and heate the dry, and the dry ſo heated, give fire to the greene, till both be either rotted, or conſumed; and hence it came, that expert Huſbandmen deviſed to lay their Pulſe for the moſt part ever without doores in ſtackes, reekes, and hovells, that the Sunne and Wind paſſing thorow them, might bring all the Graine to an equall drineſſe and hardneſſe.

Againe,

Againe, Pulse being of all graine the coursest and fullest of substance in it selfe, and the straw ever big and substantiall, and full of broad thicke leaves ever moist and sappy; it must needs follow that this graine must ever be most apt to sweat in the mow, and so necessarily craveth the greatest store of aire, and the longest time in drying; so that to returne to my first purpose, it must needs follow, that no Beanes or Pease can be ripe or seasoned in the mow, till it be mid *March* at least; for it is an old saying among the best Husbandmen; *That a March wind is a salt that seasoneth all Pulse:* And if use or necessity compell men to thrash their Pulse before that time, the graine is so imperfect, that it must be Kilne dried, or else it is fit neither for the use of bread nor provender.

Now herein is to be understood that Pease or Beanes which are Kilne dried, may be kept sound, sweet, and good, either on plaster-floores, boarded floores, or earthie floores, the space of many yeeres without turning or tossing; nor need you to respect how thicke the heape lie, since Beanes after they are once dried on the Kilne, or in the Sunne, never after will thawe, give againe or relent, but remaine in their first soundnesse. But if you preserve your Beanes for other uses, as to boyle in your pot, and feed your servants withall, as is used in *Somerset-shire*, and many other Westly parts of this Kingdome, then it shall be good for you to take oile-barrells, oile-caske that is sweet, and first Calke them all over within and without with ashes, and then put your Beanes therein, and close up the heads, and as it is affirmed by divers great Authours of Husbandry, it will keepe Beanes sound, sweet, and good, twenty yeeres: nay, some give instances of Beanes which have beene thus kept and preserved the space of

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one hundred and twenty yeeres; and surely I am perswaded, that if Beanes be well and dry got, and thrash'd at a seasonable time of the yeere, as in *March* or *April*, that then thus kept, they will last the uttermost of a mans pleasure.

Preserving of Pease or Fetches.

Now for the keeping and preserving of Pease or Fetches, which of all other Graine whatsoever, is most subject to rottennesse and imperfection, because out of it's owne nature it is apt to breed Wormes, Weavils, and Mytes, by reason of the much lushious sweetenesse of the Kernell of the Graine; you shall in all things observe the same courses that you doe with your Beanes, both touching your gathering, drying, stacking and also thrashing, for as they are most aptest to grow together, being neere of nature and condition one to the otherr, so it is fit that unto them you doe apply one and the selfe same medicine or remedy.

And herein is to be noted, that as Pease are of more generall use than Beanes, as for Horse-provender, feeding of Swine, Pigeons, Pullen, and such like; as also for bread, pottage, to boyle with or without meate, for certainly it is a most wholesome and strong food, as may be seen by the people of *Devonshire*, *Cornwall*, and *Somersetshire*, to whose great strength of body not any reason can be given more probably than their much feeding on this Graine, and their acquaintance with much and strong labour, so they ought with more care and circumspection to be preserved from all those annoyances that naturally are apt to hurt them, as wormes, rottennesse, mould, mustinesse, and such like.

And first, there is nothing better for the long and well keeping of Pease, than the very well drying of

them, either in the Sunne or on the kilne, especially those which you use for bread, provender or feeding of Swine: and although some Husbands use to feede Swine with undried Pease, nay many times both undried and undrest, that is to say, the Pulse or Chaffe, not taken away, and are of opinion, that the Graine so given, sooner feedeth and puffeth up Swine then the other, yet they are deceived; for albeit it swell and puffe up a beast, yet is the flesh and fat neither so good, sound, and long lasting, as that which is gotten with drie food, nor doth it make a swine so thirsty, and the Husbandman is ever assured that when his swine drinkes not well, he feedes not well; therefore what Pease you keepe for bread or feeding of Cattell, by all meanes dry them well, and lay them either in Garners or Floores, and they will last sound and good without breeding worms or wevels, as long time as you please. But those which you keepe for foode at your owne table, as in pottage, or other uses, which must by no meanes be too much dried, because then they aske a double time in boyling, and spend a double quantity of fuell in their preparing. Some use after they be cleane thrasht and drest, to lay them in a coole close Garner, either of Plaster, Earth or Boords, of which, Plaster is the best; as for any thing that relenteth or yeeldeth moysture, as Lime, stone walles, or such like, it is most hurtfull, and immediately maketh Pease mould and rot: also it is good to lay your Pease in thicke heapes in your Garner, for that will preserve them moyst the longest time, but to spread them thinne upon the floore, by which meanes the sunne, aire, and winde may passe thorow them, is not so good, for it drieth them too sore, and taketh from them much of their sweetnesse and goodnesse, which

ought most carefully to be preserved. There be others which preserve these tender meat Pease by thrashing them up, and then letting them lie in their owne pulse or chaffe, and not dressing them but as they have occasion to use them, and questionlesse this is a very good and laudable way, for the pulse or chaffe doth maintaine them sweet and moist, & yet keepeth them withall so warme and comfortable, that they last much longer then any other way whatsoever, and in this manner of preserving Pease is to be noted, that by all meanes you must let them lie upon a dry earth-floore, so long as they are in the chaffe, rather than on the boord, or on plaster, and yet in this case the boords are better than plaster.

Lastly, and which indeed is the best experiment of all other, if you intend to keepe Pease any extraordinary long time, you shall take Barrels or dry Caske, well and strongly bound, and pitch them within exceeding well, with the best pitch or bitumen that you can get, and then sprinkle the pitch all over with strong Vinegar, then take your Pease being cleane and well drest, and put them into the Barrels, pressing them downe close and hard, then head up the Barrels, and let them stand dry and coole, and they will preserve your Pease sound, sweet & good for any use whatsoever as long as you please, be it for tenne, twenty, or thirty yeares, according to the opinions of ancient Husbandmen, and other provant masters that have lived and commanded in Townes besieged, and Townes of Garrison; neither shall any worme, mite, or weavell, ever breed in it, or offend it, nay if any have in former time beene bred in them, this manner of keeping the graine, killeth them, and destroyeth them for ever.

Now

Now there is another ſort of Pulſe which are called Lentils or Lupins, which albeit they are not ſo generally uſed for the foode or ſuſtenance of man, yet they are for Horſe, Swine, and other Cattell as much in requeſt, as any Graine whatſoever, and indeed doe feede fatter and ſooner than other ordinary Pulſe, and the fleſh ſo fedde is ſweeter and pleaſanter both to the eye and to the taſte, then that which is fed with Beanes or Peaſe; alſo they are a Pulſe very Phyſicall and good for many medicines, as may appeare by the workes of many learned Phyſitians; and theſe the longer they are kept, the better they are, and fuller of profit. To preſerve them then in good and ſound eſtate, it is meete to reape them in very faire weather, and to ſtacke them up exceeding dry, and if they be laid in the Barne, or any cloſe houſe, it is not amiſſe, for they will endure houſing better then any other Pulſe, yet the ſooner you beate them out of the ſtraw, or thraſh them up, the better it is, for Husbandmen ſuppoſe there is no greater hurt to this kinde of Graine, then the long keeping it in the ſtraw, for it is of ſuch rankeneſſe, that the very ſtraw and cods breed in it much putrifaction; and I my ſelfe obſerved both in *Spaine*, and in the neighbour Iſlands, where is great abundance of this kinde of Graine, that they doe no ſooner gather it and bring it home, but immediately they thraſh it; nay, ſome thraſh it in the fields upon the lands where it growes, and ſo bring it home, then ſpread it on faire boorded floores in very great heapes, or elſe lay it up in cloſe hutches, or bings, ſuch as Wheate and other white Graine is to bee kept in. If you dry this kinde of Pulſe in the Sunne, or upon a kiln, with a very moderate and ſoft fire, and then lay it

Preſerving of Lentils or Lupins.

up either in close garner, or close hutch, it will last many yeares sound, good, and without corruption; there bee other Husbandmen which mixe with this graine when it is thrasht, a halfe part of hot, dry, white sand, or at least cover the whole heape of Pulse with the sand, and doe finde that it keepes the graine very sound and good many yeeres together. But to conclude, if you take strong Vinegar, and a good quantity of *Lacerpitium*, and dissolve and mixe them very well together, and then having laid your lentils or lupins together on a faire boorded floore, in large, broad and flat heapes, about two foote, or two foote and a halfe thicke with the Vinegar and *Lacerpitium* sprinkle over all the heape, and not any change of weather, frosts, wormes or other vermine shall doe them hurt, but they shall remaine sound and good as many yeares as you please to keepe them. There are other Husbandmen that instead of this before rehearsed, take onely sweete oyle, and sprinkle it all over the graine, and finde the same vertue and effect, for neither wormes nor other vermine will touch it, nor will the radicall humour thereof at any time waste or decay, but remaine strong, full and sound without any kinde of diminishing, nor shall you finde any abatement of it, or shrinking in the measure, but that which was a bushell this yeare, will be also a bushell the next yeare, and as many yeares after as you please; which is no small profit to the owner: whereas on the contrary part if the graine be either dried in the Sunne, on the Kilne, or by the winde, you shall hardly have of every such bushell so dried, three peckes and a halfe againe, which is by computation at every quarter which is eight bushels, full one bushell lost, and yet this Pulse thus preserved

ſerved as before ſaid, ſhall be as good for any uſe whatſoever, fit for ſuch Corne to be imployed in, as any other dryed Graine whatſoever, and yeeld as much every way, and altogether as good meale, and as good meat.

Now touching the preſerving and keeping of Oats, it is to be underſtood that of all Graine it is leaſt caſualall, becauſe of it ſelfe naturally, it breedeth no evill vermine, and is againe preſerved and defended with a double huſke, whereby neither cold, moyſture, heat, nor drineſſe is able ſo ſoone to pierce and hurt it, as other Graines which are more thinne skin'd, and tender, yet becauſe it is of great and neceſſary uſe, both for Cattell and Pullen, and that neither the Huſband nor Houſewife can well keepe houſe without it, you ſhall know, that the beſt way to preſerve it longeſt, is, after it is thraſh'd, to dry it well either in the Sunne, or on the Kilne, and then either put it into cloſe Garner, or cloſe Caſke, and it will keepe many yeeres ſound and ſweet. Preſerving of Oates.

Touching the preſerving of Oate-meale, which is the inner kernell of the Oats, and a Graine of moſt ſpeciall uſe in the Huſband-mans houſe, as in his pottage, in his puddings, and in many other meats neceſſarily uſed for the labouring man; It is an experiment not altogether ſo curious as any of the reſt formerly written of, for no Oate-meale can be made, but the Oates muſt be exceedingly well Kilne-dryed, or elſe the kernell will not part from the hull, and being dri'd, as is fit, that drying is ſufficient to keepe and preſerve the Oate-meale divers yeeres: provided ever, that preſently after the making of your Oate-meale, you put it into dry cloſe Caſke or dry cloſe Garner (but Caſke is the better) and ſo as it may remaine Preſerving of Oat-meale.

exceeding dry (for any thaw or moysture corrupts it) and as neere as you can let it have, if it be possible, some aire of the fire, for the warmer it stands, the better and longer it will last, as experience sheweth.

Preserving of any meale.

For the preserving or long keeping of any sort of meale, there is no better way then first to boult and searse him from his branne, for the branne is very apt to corrode and putrifie the meale, and to bring it to a faughtinesse or mustinesse, than into very sweete and cleane dry Caske close and well bound, treade in your meale so hard as you can possible treade it, and then head it up close, and so you may keepe it either by land or water as long as you please, and when you have any occasion to spend of it, be sure to loosen no more of the meale then you presently use, for the faster and closer the meale lyeth together, the longer and sweeter it will last, for it is the gathering in of the aire that onely corrupts it.

And here is also to be noted, that you should not presently assoone as your meale is ground, boult from the bran, but rather let it lye a weeke or fortnight in the bran in some close Byng or Trough, and then after that time, boult or searse it, and you shall find it to afford you in every bushell more meale by at least halfe a pecke, then if you should presently assoone as it comes from the Mill, whence it proceeds, that the cunning skilfull Baker will ever have a weeke or fortnights provision of meale before hand, which lying so long in the bran, paies double interest for the continuance.

Now if it fall out so, that either by trade of Merchandise, or other occasion, you buy any meale by

way

way of transportation which is cask'd up (as much meale is sold by the barrell) you shall presently as soone as you have bought it (if it be for your owne use or expence) breake open the heads and empty the meale upon faire sheets on a cleane floore, and then spreading it abroad, let the Sunne and Aire passe thorow it, which will dry up the sweat, and if there be any taint of faughtinesse, take it away, and bring the meale to his first sweetnesse, and then immediately boult out the course bran, and after, as was before declared, tread it hard into fresh and sweet caske: and thus you may keepe your provision of meale all the yeere long; nay, if need require, two or three yeeres; for after the first sweat is taken away, and kindly dryed, there is no doubt to be made of any that shall follow after.

Lastly, touching the preserving and keeping of all manner of small seedes of what nature or quality so ever they be, whether Hempe, Line, Rape, Mustard-seed, or any other Garden-seed whatsoever, though truely and properly they last never above one yeere, nor are fit for seed or increase after that date expired, yet in as much as they are medicinable after, and a much longer time, therefore you shall understand, that the best way to keepe them safe and sound, and the fittest for use and profit, is, first to gather them as soone as you perceive them to be ripe, and the weather being bright, cleare, and dry, then shall you dry or wither them in the shade, and not in the Sunne, especially upon a plastered floore, where the light looketh to the South, and be sure, that as little Sunne and moisture come to them as you can, for both are maine enemies; which done, bind them up in bundles, without thrashing, and so hang them up and keepe them in their

Preserving of all small seeds.

owne cods, and they will last for all uses, a full yeere, and for some particular uses two or three yeeres; and in this manner you may also preserve all manner of herbs, weedes, flowers, roots, and the barkes or rinds of all manner of trees.

CHAP. 19.

How to keepe Graine, either for transportation by Sea, or for use in a towne of Warre or Garrison, from one yeere to one hundred and twenty.

The use of Graine, Pulse, at Sea.

Of Rice, and the use.

TO speake of the Graines and Pulses which are meetest for the Sea, and their severall uses.

It is to be understood, that the best and principallest Graine which is indeed both most sweet, most fresh, most pleasant in taste, and most long lasting, is Rice, which, although it grow not much in our Kingdome, but that we are beholden to our good neighbours for the trade thereof, yet it is in such plenty, where wee fetch it, that we need neither complaine of the scarcity nor the cost, and so much the rather, in that a pecke thereof will goe further than a bushell of any other Graine; of this Rice, is made many good and wholesome dishes, some thicke, some thinne, some baked, some boil'd, as thus: If you take a quarter of a pound of Rice, and boile it in a pottle of water, till it come unto an indifferent thicknesse, and then put into it a good lumpe of potted or barrelled Butter, and as much Sugar as shall salt-wise season it to an indifferent sweetnesse, it is a dish of meat, meet for an Emperour at Sea, wholesome, good, and light of disgesture, and will be as much as foure reasonable men can well eate at a meale;

meale; for the nature of the Rice is such, that it will swell in boyling, and grow to that bignesse, that in an instant it will thicken a pottle; some use the night before they boile it, to steepe it in so much water as will onely cover the Rice all over, and then the next day boile it in a pottle of water more, and the Rice so steeped will so swell, that all the first water will be drunke up, and a great deale of lesse boiling wil serve to make it ready, and sure then this a man cannot finde a cheaper way to feed men, since one pinte of water, and the fourth part of a quarter of a pound of Rice (which comes not to above a halfe penny at the dearest reckoning) is a meale sufficient for a mans eating, having bisket and drinke proportionably. And this dish of meate being but thus thinne boiled, is called at Sea *Lob-lolly*, and after salt-feeding is wondrous wholesome and comfortable to any man, whether he be sicke, sound, or diseased, and both abateth infirmities, and hasteneth the healing of all wounds. There be others, that after they have steeped this Rice (as aforesaid) doe then boyle it in like manner, till it be so thicke, that a spoone may stand upright in it, and no liquidnesse of the water perceived, then put a good lumpe of butter into it, and boyle it with it, and stirre it about, and it will make it come most cleane out of the pot in which it is boyled; then season it with Sugar and a little Cinamon, and it will be a dish of meate right good and delicate, and meet for any man of what quality soever, that is worth goodnesse or preserving, nor neede the quantity exceede the proportion already preseribed.

Againe, if you have meale in the ship, if you take of this Rice steeped in water, and a little lightly boiled and seasoned with Sugar, Cynamon and Ginger, and a

good

good quantity of Butter, and then bake it in little Pasties, you shall finde it a most delicate, pleasant, and wholesome meate, and that a penny in it, shall goe further, and give better contentment, then foure penniworth of Beefe, Bacon, Fish, or any other hard salt meate; yet I doe not wish any man of ship-board to make this a continuall feeding dish, for it is both too pleasant, and too strong, and where evacuation of some humours are wanting, may breed inconvenience in strong bodies; but rather to use it once a weeke as a physicall nourisher, or for the comfort of sicke and diseased men, whose stomaches are taken away, or else weakened; there may be also made of this Rice, in time of necessity (being ground to a fine meale) an excellent good bread or ruske, which is pleasanter, sweeter, and much longer lasting then any made Wheate, or any other Graine whatsoever, besides many other seeds which would in this place shew but too much curiosity to repeate.

Wheat, and the use.

The next Graine unto Rice, which is of estimation and great service at the Sea, is Wheat, of which, although there be divers kinds, yet they are all alike for the serving of this purpose; only the large and thicke hull'd Wheat (being well dryed) will last the longest, but the smaller and fine skinn'd Wheat, yeelds the purer flower, and makes the better meat. Now of this Wheat is to be made divers dishes of meat; for some doe take it, and bruise it or beat in a bagge, till the upper skin be beaten off, and then having drest and winnowed it, boile it in cleane water till it burst, and grow as thicke as pap, and then take it from the fire, and being hot, put into severall dishes of wood, or traies, so much in every dish or tray as may serve foure

men,

men, and so let it coole; then give it to the sicke or sound, as you shall be directed, and it is an excellent wholesome good meat, either cold or else hot, and a little Butter melted with it, or being againe boil'd in fresh water, and seasoned with Salt and a little Sugar, it makes an excellent grewell, or Lob-lolly, which is very soveraigne at Sea; also your parched Wheat is a very good food at Sea, and of much requeſt and estimation, being sprinkled with a little Salt, and of this food a little will serve a man at a time, by reason that the much sweetnesse thereof soone filleth and cloyeth the stomach, yet it is wondrous light of digestion, and breeds great strength, and much good blood, as wee daily find by experience.

The next Grain unto this which is to be recommended to the Sea (and which is indeed not any thing inferiour to either of the other going before, both for strength and lasting) is Oat-meale, which by reason of the great drinesse, and drying thereof, feeles little or no imperfection at the Sea, as being unapt to sucke or draw in any of the ill or moist vapors thereof. Of this Oat-meale is made many good, fresh, and comfortable meates at Sea, as Grewell, or Lob-lolly, by boyling it in fresh water, and seasoning it with Salt, and (if you have it continually) sometimes with Sugar and a few Currants, and a little Mace, which is meat of great strength and goodnesse, especially for such as are sicke and weake, for it is a great restorer of Nature, and a purger of the blood; also to steepe the whole Grots of Oat-meale a night in water, and then draining them, and putting it into a bag, boile it till the Grots breake, then putting it out of the bag, butter it with Butter, and it is an excellent food; also boyling Oat-meale in fresh water with Barme, or dregges and hinder ends of your

Of Oat-meale, and the use.

your Beere-barrells, makes an excellent good pottage, and is of great use in all the parts of the West country, especially, where Marriners or Sea-men live, and are called by the name of Drousson pottage. Also of Oat-meale is made that meat which is called in the West, Washbrew, and may be made at the Sea at your pleasure, being a meat of that great account amongst *Devonshire* and *Cornish-men*, that they will allow it no parallell; and for mine owne part, I have heard a most famous and well-learned Physitian in those parts, allow it to be a meat of singular great strength & goodnesse, and withall so light of digestion, that a man can very hardly surfeit upon it at any time; and I am the rather induced to believe the same, because I have observed and seene many of the labouring men of that Country to eate such an unmeasurable quantity thereof, that in mine eye one mans supper would have served a whole family.

But you will say, hunger and labour are such excellent sawces, that they will digest any thing. To that I answer, that I have seene Gentlemen and Gentlewomen of that Countrey, of whom as much curiosity hath attended, as is liable to the City, nay, such as have had sicknesse their best familiar, yet eate of this with great and sharpe appetite, and when health was most to be feared, then to boast of most soundnesse. This Washbrew is to looke upon, like Painters Size, or new made Jelly, being nothing but the very heart of the Oat-meale boyled and drained to that heighth and thicknesse, having neither hull nor bran in it, but the pure meale and water, and it is to be eaten either with Wine, strong Beare, or Ale, or with clarified Honey, according to mens stomaches or abilities.

Now

Now this the eaters thereof affirme, that by no meanes it must be chawed, but rather swallowed by the spoonfull whole, because chawing like a pill makes it taste unpleasantly. There is againe another meat to be made of Oatemeale, which is called Girtbrew, and is somewhat more course, and lesse pleasant than Washbrew, having both the bran and huls in it, yet is accounted a foode of a very good strength, and exceeding wholesome for mans body, and of my knowledge much used and much desired of all labouring persons that are acquainted with it: Many other foods there are to be made of Oatemeale, but these shall be at this time fully sufficient.

The next graine to this I account Barley, which may be every way used like unto wheat, either to make grewell, to be creyed, parcht, or boyled: and of Barley for this purpose of foode, the best is *French-barley*, the next is Barley big, or beare Barley, and the worst are the spicke or battledore Barley, and our common *English-barley*. Of Barley and the use.

And as Barley or Wheate, so you may use your Bucke and your *Indian Silligo*, for they are of like nature, onely aske a longer time in their beating, steeping, and boyling, because they are naturally more hard, and more dry, by reason of the heate of the Climate in which the best grow; and is ever to bee observed for a rule, that the dryer you keepe your Corne at Sea, the better it is, the sweeter and longer lasting. Bucke, and the use.

Now having shewed the use of these lighter grains, I will come to Pulse, and shew their use and benefit at the Sea, or in besieged Townes: and of Pulse, I will first speake of Beanes as a principall food, wholesome Of Pulse, and first of Beanes, the use.

and

and ſtrong,& though not ſo fine and light of digeſtion as any of the former, yet exceeding hearty and ſound, and a great breeder of good blood; they are for the moſt part to be boyled whole, till ſuch time as they appeare ſoft and tender, or begin to breake, and then drained from the water, are ſerved in traies, and well ſalted, and ſo eaten; a pottle whereof is thought a full proportion for foure men: and of theſe Beanes there are diverſe kinds, as the common garden beane, or the French beane, which is great, broad, and flat, and theſe are the beſt to boyle, either with meate, or by themſelves, and aske the leaſt labour, becauſe their outer skinne is moſt tender, and the inward ſubſtance moſt apt to be mollified and ſoftened: they may alſo be boyled both when they are young and greene, and when they are old and dry, and the meat at both times is good and ſavory.

The French Beane.

The next beane to theſe are the Kidney beane, which is flatter, and leſſer, and neerer the proportion of a Kidney then the French beane is, and this is alſo a garden beane, and whilſt it is young and greene is to be eaten Salet-wiſe after they are boyled, both the cod and beane together, and it is certaine a better ſallet cannot bee taſted; for the cod or huske is every way as excellent in taſte as the beane is; but after they grow old and dry, and that the moyſture is gone out of the cod, then it is meete to thraſh them, and then boyle them like the French beane, and they are every way as good meate, and as ſoone boyled and as tender.

The kidney Beane.

The next beane to theſe are your common and ordinary field beanes, which having tough and hard skins, aske more boyling then the other beanes, & are ſomewhat

Common field beanes, the uſe.

what harder in taste, yet a good sound foode also: there be many that parch them in the fire, and thinke them then the best meate, because the fire sooner breakes the skinne and softneth the kirnell; but they cannot be done so abundantly, and therefore are not so much in use.

Of pease and the use.

After this great sort of Pulse, I will now speake of the smaller sort, as Pease and their like: and of Pease there be two kinds, the garden Pease, and the field Pease, and for this use (albeit both are very good) yet the garden pease are best, for they are soonest boyled, and are most tender, and serve for most use, as for pottage, boyling, parching or spelting; and of these garden Pease, there are diverse kinds; as white Pease, French Pease, hastings, rounsivals, and such like; the first being the longest lasters, the second the pleasantest in taste; the third the earliest and tenderest, and the last largest and fullest.

Severall sorts of garden pease.

The field Pease are onely of two kinds, as the white pease and the gray pease, and they seldome make pottage, because they are unapt to breake, but are onely for boyling and making of leap Pease, or for parching, yet a good and a strong food also: and as we use Pease, so in other Countries they use lupins, lentil, tares, fetches, and such like smaller pulse, but they are neither so good, wholesome, nor savoury in taste, being a kind of graine more ranke, fulsome, & breeding of ill blood and infection within, these in cases of Sea-fare & Warfare ought principally to bee eschewed and shunned.

Now it resteth after this long digression of these severall Graines, & their uses, with the meates and profits which are made for them, that we come to the safe manner of keeping and preserving them either by land or water, for victuall or transportation, so as

they

they may last and endure without ill smell or rottennesse.

To transport Graine.

And first for transportation of Graine by Sea, it is two waies to be done, as either in great quantities for trade and the victualling of other Nations, or in smaller quantity for victualling the men in the ship, prepared for a long and tedious voyage.

Transporting Graine for trade.

For the transporting of Graine for trade in great quantities, it is to be intended the voyage is seldome long, but from neighbour to neighbour, and therefore commonly they make close deckes in the ships to receive the Graine, faire and even boorded, yet if such deckes be matted and lined both under and on each side, it is much the better, and this matting would be strong and thinne; there bee some which make the deckes onely of mats, and sure it is sweet, but not so strong as the boord, therefore the best way of transportation is to have strong boorded deckes well matted, and then spreading the Corne of a reasonable thicknesse, to cover it with matting againe, and then to lay Corne on it againe, and then mats againe, that betweene every reasonable thicknesse of Graine a mat may lie, the profit whereof is, that when the Corne with his owne heate and the working of the Sea shall beginne to sweate, which sweat for want of aire to drie it up, would turne to putrifaction, then these mats thus lying betweene, will not onely exhale and sucke up the sweate, but also keepe the Corne so coole and dry, that no imperfection shall come unto it: and here is to bee noted, that these mats should rather be made of dry white bents, then of flagges and bulrush, for the bent is a firme, dry, crispe thing, and will not relent or sweat of it selfe, but the flag or bulrush is a spungy and soft substance which

is

is never empty of his owne and other moystures.

Now for transporting of Graine, for Victualls for the ship, which is in much smaller quantity, because it is but for the private use of a few within the ship; the only best and safest way, is, to take Salt-fish barrells, or any Caske in which any Salt-fish hath beene piled, as Cod, Herrings, Salmon, Sprats, or any other powdred Fish; and whilest the vessells are sweet, you shall calke them both within and without plaster, daubing them all over; then into them put your Graine of what kind soever it be, and head them up close, and then stow them in such convenient dry place of the ship, as you shall thinke fit, and questionlesse, if beliefe may be given to the worthiest Authors which have writ in this kinde, you may thus keepe your Graine sweet, sound, and in full perfection from one yeere to an hundred and twenty yeers; but certainly daily experience shews us, that all kind of Graine thus put up and kept, will remaine sound & sweet, three, foure, and as some say, seven yeeres, for so far hath lately been try'd: and what here I speake of ship-boord, the like may be done in any town of War or Garrison, whether besieged, or not besieged, or in any other place, where any necessity shall compell; the proofe of this manner of piling or putting up of Graine, serveth as well for Land as Sea.

Transporting for victuall.

CHAP. 20.

The enriching of all manner of barren Grounds, and to make it fruitfull to beare Hops,

THe Hop of all Plants is the most tender, and can endure neither too rich a ground, nor yet too poore, for being planted in the first, it bringeth forth onely leaves and no bells, and in the latter yeeldeth neither leaves nor bells.

Abating fertility.

Now in the first sort of ground, which is fertile and rich, I have nothing to doe, but onely to advise how you may allay and lessen that too much fatnesse, by mixing your hills well with Chalke, or small sharpe gravell; if it be a hassell or mix'd mould, and with good store of red sand if it be a stiffe clay, for either of these mixtures will in short space abate any fertility.

Increasing of fertility.

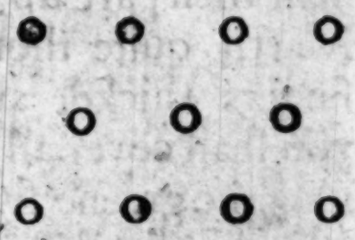
But if the soile be contrary to this, that is, extreme barren, then you shall seeke by these meanes following to encrease the fertility: First, when you have taken view of that barren earth, which you intend to convert to a Hop-garden, you shall first looke to the situation thereof, whether it lie high or low, whether it be subject to inundations or drownings, or that it lie safe and free from any such annoyance: If it be subject to great and deepe overflowes, then it is no ground for this purpose; but if it be onely liable but to some small washings, then you may by a few small draines and sewers cast thorow your allies, convey away the water unto some lower ground, so as it may not continue long in the Gardens to doe hurt. Besides, for a further safety to the Hop, you shall make your hills a great deale bigger and higher, that when any over-flow shall happen, the water may not reach above the mid part of the hill at the most, for the root may indure moystning, but not drowning: and this water thus running through the allies, and not drowning the roots, will bring to the ground very much fertility. But howsoever, after you haue eas'd your ground of these particular faults, yet the generall fault which is barrennesse, will remaine still: therefore, having plotted out your Garden, and fenced

Choice of a Earth.

Draining water.

ced it ſufficiently about, you ſhall then caſt up your hills about *Michaelmas*, placing them in a very orderly manner, and making allies betweene them of foure or five foot bredth betweene hill and hill, ſo as a man may walke at pleaſure through and about them, neither ſhall theſe hills ſtand all directily behind another, for ſo one will over-ſhade another, which is an annoyance, but according to this Figure, where there is a largeneſſe of ſpace, and a by-paſſage, through which the Sunne may come to give comfort to every Plant.

Casting of the hils and allies.



Theſe hills, if the ground be free from water, may be raiſed about two foot, or a foot and a halfe high, and of a compaſſe anſwerable to the height; neither ſo little, that the hill may be ſharpe like a Sugar loafe, not yet ſo bigge, that the hill may lie flat, and ſo retaine and hold any raine, or wet, which ſhall fall upon it; but you ſhall keepe a due middle proportion, making the hill convenient for your Plants and Poales, and ſo as it may ſhoote or put off any wet, or other annoyance which ſhall fall upon it.

Now theſe hills you ſhall not make entirely, all of the one mould, but you ſhall take, as it were, a third part or better thereof; then another part of the earth which lieth under dung-hills, and the laſt part of Sope-aſhes, and theſe three bodies you ſhall mixe equally together, and of them compound your Hop-hills. But if this ſeeme ſomewhat too difficult, and that you cannot find enough for your purpoſe of either of theſe meanures; then you may take three parts of the naturall earth, and but onely a fourth part of the other two, and thereof mixe your Hop-hills,

The compoſition of the enriching of hils.

and it will be ſufficient to afford you profit enough; provided you be able once in three or foure yeeres to renew it, for ſo long this will laſt in full ſtrength and power.

Preparing of the allies.

When you have thus made up your hills, you ſhall then pare up with a paring ſhovell, all the greene ſwarth quite thorow all your allies, at leaſt foure fingers thicke, and with the ſwarth ſo pared up, you ſhall cover all your hills almoſt to the top, turning the greene ſwarth next unto the earth, ſo as it may rot, for that is an excellent meanure alſo. Then when your allies are all thus cleanſed of their ſwarth, you ſhall take good ſtore of Braken or Ferne, and ſtraw it all over quite thorow all the allies, that it may lie a good thickneſſe, almoſt to the midſt of the hills, which having all the Winter to rot in, will not only be an exceeding comfort to the hills, and preſerve both them and their Plants from many evills, but alſo being ſhovelled up together with the earth in the Spring time, will be a marvellous ſtrong meanure wherewith to repleniſh the hills, and to make them to proſper exceedingly, and to ſave much other coſt and charges, as well in meanure as in carriage.

The planting of Hops.

When your hills are thus enriched, and your allies thus prepared, you ſhall then open your hills in the tops, and ſet your Plants, that is to ſay, in every hill foure Plants at the leaſt, being well prepared, and this ſhould be done in the moneth of *October*, and theſe Plants muſt be ſet good and deepe in the earth, and covered all over, at the leaſt foure fingers thicke; and if with the earth which covereth theſe Plants, you mixe Oxe-blood and Lyme, it will not onely give great comfort and nouriſhment to the Plants, but alſo defend and ſave the roots from wormes and other

vermines,

vermines, which otherwise would seeke to destroy them.

After your Garden is thus planted all over, you shall then let it rest to the following Spring, and about *April*, finding the small twines of your Hops issued out of the hills, and running alongst the ground, you shall then set up your poales, which poales, so they be long and streight, may be of any wood you please, as either Ash, Elme, Withy, Willow, or Sallow, and in setting up of these poales, you shall have two very carefull respects: First, that in putting in of the poals, and fastening them within the earth, you doe not hurt the Hop-roots, which a small carelessnesse may doe, but be sure to set them cleare at the roots: and that you may doe it the better, and make your poales to stand the faster, it is good that you have an iron Augar wherewith first to pierce the ground, and then to put the poale in after, and so ram it in hard, that it may not stirre: the second care is, that you place not one poale to overshadow another, but that they may stand so cleare one from another, that which way soever the Sunne shall cast his beames, yet every plant (as it winds about the poale) may be an equall partaker of the same; this with a small observation in the setting up of the poales may easily be performed. The number of poales that you shall set upon every hill, must be answerable to the Syens which shall issue from the roots, allowing to every poale two Syens at the least, and not above three at the most. These Syens (when your hills are poaled) you shall with your hands twine about their severall poales, and those which are but new peeping from the ground you shall so fold among the other branches, as they may of themselves run about the poale; and as these so also all

Poaling of Hops.

Why an Augar

the other twigs, which are any way derived from the maine Sien, leaving not any at all to runne upon the ground, for that is altogether profitlesse, and to no use.

Of weeding Hops.

For the weeding of this barren earth thus made into an Hop-garden, there is little care to be had: for first the Sope-ashes wherewith the hills are meanured, the Oxe-blood and the Lime, are such enemies to all manner of weeds, that they will not suffer any to grow where they abide: Next the Braken and Ferne which covereth the allies, is such a poysoner and smotherer of any thing that shall grow underneath it, that it will not suffer any weed to peepe or spring up through it; yet if in any especiall place where neither of these defences come, it happen that any weeds doe grow, then you shall with your best care cut them away, or pull them up, and so your Garden shall remaine comely, pleasant and fruitfull to every prospect.

CHAP. 21.

A generall computation of men, and cattells labours: what each may doe without hurt daily.

Plowing and Sowing.

TO speake generally of all husbandly workes where the Country is tollerable without any extraordinary difficulty, you shall understand, that a man may well in stiffe ground, plow an acre, or an acre and a halfe, and in light sandy grounds, two or three acres with one Teame in a day, and hee may plow and sow in stiffe ground two acres and a halfe each day, and in light ground foure at least with one Teame, and alwaies what hee soweth, that hee may harrow the same day also.

A man

A man may well mow of good and deepe loggy meadow, or of rough uneven meadow, every day one acre, mowing cleane, and making a ſmooth boord: of well ſtanding and good ſmooth meadow an acre and a halfe each day: and of very thin and ſhort graſſe, or upland meadow two acres at the leaſt every day. Mowing.

Alſo, he may mow of corne, as Barley and Oates, if it be thicke, loggie and beaten downe to the earth, making faire workes, and not cutting off the heads of the eares, and leaving the ſtraw ſtill growing, one acre and an halfe in a day: but if it be good, thick and faire ſtanding corne, then hee may two acres, or two acre and a halfe in a day: but if the corne be ſhort and thin, then he may mow three, and ſometimes foure acres in a day, and not be over-laboured: Alſo of Beanes he may mow as much, and of Peaſe mix'd with Beanes, having a hooke to follow him, no leſſe; for they are workes in this nature moſt eaſie, and leaſt troubleſome.

One man with a binder may well reape an acre of Wheat, or Rye in a day, if it be principall good and well ſtanding, but if it be laid or beaten downe with weather, then three rood is fully ſufficient for a daies labour; but if it be thin and upright ſtanding, then hee may reape and bind five roods in a day: of ſmall Peaſe, Fetches, and ſuch like, a man may well reape two acres every day. Reaping.

Now for aſmuch as it is a cuſtome in divers Countries (and truly it is exceeding profitable and worthy imitation) to ſheafe and bind up both Barley and Oats, as well as Wheat or Rye, and that it both ſaveth much corne, and alſo makes it take a great deale leſſe roome, and that this labour is to be done after the mowers, as the other was after the reapers by gathering the Bar- Binding of Barley and Oates.

ley or Oates up with a sickle or hooke, as it lies in the swath, and so binding it in sheaves, you shall understand, that one man in a day, will bind as much as one mower can mow, and if the men be any thing skilfull in the labour, two binders will bind as much as three mowers can mow.

Gathering in of Graine.

For the gathering or inning of graine, no man can proportion the number of loads, or quantity of ground shall daily be brought home, sith the iourneyes are uncertaine, some going a quarter of a mile, some halfe a mile, and some a mile: therefore it is the Husbandmans best way the first day to goe with his Teame himselfe, and both to observe the labour and distance of place, and by that to compute what may be done after without hurt to his Cattell, and where hee failes of any hope, there to take a strict account of the errour; for it is either ignorance or carelessenesse, which brings forth mischances, speaking of husbandry, as over-throwing the Teame, over-loading the Teame, breaking necessary Instruments, or not respecting the waies and passage, any of which may in a day hinder more than halfe the daies labour.

Ditching.

Againe, a man may in a day ditch and quickset of a reasonable ditch foure foot broad, and three foot deepe, a rod or a poll a day, allowing sixteene foot to the rod, and so of larger measure lesse ground, and of lesse ground lager measure, according to the sufficiencie of the fence which you purpose to make.

Hedging.

A man also may hedge in a day, if the hedge be good and substantiall, that is to say, five foot high, well bound, thicke stack'd, and close layd, two rod in a day, and if the worke be lower or thinner, then double so much, according to the former proportion.

For

For this plashing of hedges, or making a quick fence, if he doe it work-manly, and that the growth be high, and well growne, and then he lay it thicke, close, and strongly bound on the top, turning the quicke downeward and inward, to plash a rod a day, is as much as any man can well doe, but if yee plash it after the West-country fashion, that is, onely cutting it downe, and laying it along close to the ground, seeking only thicknesse, and not much guard or comelinesse, then he may well plash a rod and a halfe in a day without trouble, and sure in this worke is great care and art to be used, as well for the preservation of the quicke, as the goodnesse of the fence, being a thing of worth and validity to every Husband-man. Plashing.

Againe, a man may delve or digge, as for Garden-mould, Hempe-yard, Flaxe-yard, or for the setting of Corne, or levelling of uneven places, one rood in a day, and the ground so digged and delved, he may rake, dresse, and levell, in the same day also, but if he digge it deepe, and trench it, and meanure it, as is meete; either for Garden, Orchard, or Corne-setting, then to delve halfe a rood in a day, is a very great proportion, because ordinarily to delve, as to receive ordinary seeds, requires but one spade graft in depth, but extraordinarily to delve, as for inriching and bettering of the ground, and to cleanse it from stones, weeds, and other annoyances, will require two spade graft at the least. Delving.

Lastly, a man may thrash if the Corne be good and cleane, without some extraordinary abuse or poverty in the graine, in one day foure bushells of Wheat or Rye, six bushells of Barley or Oats, and five bushells of Beanes or Pease, but the Pulse must then be imagined to be exceeding good, otherwise a man shall thrash lesse Thrashing.

of

of it, then of any other kinde of graine, for as when it is well loaden, it yeeldeth plentifully, ſo when it is poore and lightly loaden, it yeeldeth little or nothing, and yet hath not one ſtroke leſſe of the flaile, nor any labour ſaved more then belongs to the beſt Pulſe whatſoever, being ever at leaſt three times turned, and foure times beaten over.

The particular expence of a day.

Having thus generally runne over (in a ſhort computation) the labours of the Huſbandman, I will now briefly as I can, goe over the particular daies labours of a Farmer or Plowman, ſhewing the particular expence of every houre in the day, from his firſt riſing, till his going to bed, as thus for example: we will ſuppoſe it to be after *Chriſtmas*, and about plow-day (which is the firſt letting out of the Plough) and at what time men either begin to fallow, or to break up Peaſe earth, which is to lie to bait, according to the cuſtome of the Country; at this time the Plough-man ſhall riſe before foure of the clocke in the morning, and after thankes given to God for his reſt, and the ſucceſſe of his labours he ſhall goe into his ſtable, or beaſt-houſe, and firſt he ſhall fodder his cattell, then cleanſe the houſe, and make the booths cleane; rub downe the cattell, and cleanſe their ſkins from all filth, then hee ſhall curry his horſes, rub them with clothes and wiſps, and make both them and the ſtable as cleane as may be, then he ſhall water both his Oxen and Horſes, and houſing them againe, give them more fodder, and to his Horſe by all meanes provender, as chaffe and dry Peaſe or Beanes, or Oat-hulls, Peaſe or Beanes or cleane Oates, or cleane garbage (which is the hinder ends of any kinde of graine but Rye) with the ſtraw chop'd ſmall amongſt it, according as the ability of the Huſbandman is.

And

And whilst they are eating their meat, he shall make ready his collars, hames, treats, halters, mullens, and Plough-geares, seeing every thing fit, and in his due place, and to these labours I will also allow full two houres, that is, from foure of the clocke till sixe, then shall hee come in to breakefast, and to that I allow him halfe an houre, and then another halfe houre to the gearing and yoaking of his Cattell, so that at seven of the clocke hee may set forward to his labour, and then he shall plow from seven of clock in the morning, till betwixt two and three in the afternoone, then hee shall unyoake, and bring home his cattell, and having rubb'd them, drest them, and cleansed away all durt and filth, hee shall fodder them, and give them meate, then shall the servants goe in to their dinner, which allowed halfe an houre, it will then be towards foure of the clocke, at what time hee shall goe to his Cattell againe, and rubbing them downe, and cleansing their stalls, give them more fodder, which done, he shall goe into the Barnes, and provide and make ready fodder of all kinds for the next day, whether it be hay, straw, or blend fodder, according to the ability of the Husbandman: this being done, and carried into the stable, Oxe-house, or other convenient place, he shall then goe water his cattell, and give them more meate, and to his Horse provender, as before shewed: and by this time it will draw past sixe of the clocke, at what time he shall come in to supper, and after supper, he shall either by the fire side, mend shooes both for himselfe and their family, or beat and knock hemp, or flaxe, or picke and stampe Apples, or crabs for cider or verdjuce, or else grind Malt on the quernes, picke candle rushes, or do some husbandly office within dores, till it be full eight a clocke: Then shall he take

take his Lanthorne and candle, and goe to his cattell, and having cleanſed the ſtalls and plankes, litter them downe, looke that they be ſafely tied, and then fodder and give them meat for all night, then giving God thankes for benefits received that day, let him and the whole houſhold goe to their reſt till the next morning.

Now it is to be intended, that there may be in the houſhold more ſervants then one; and ſo you will demand of mee, what the reſt of the ſervants ſhall be imployed in before and after the time of plowing: To this I anſwer, that they may either goe into the Barne and thraſh, fill or empty the Malt-fat, load and unload the Kilne, or any other good and neceſſary worke that is about the yard, and after they come from plowing, ſome may goe into the Barne and thraſh, ſome hedge, ditch, ſtop gaps in broken fences, dig in the Orchard or Garden, or any other out-worke which is needfull to be done, and which about the Huſband-man is never wanting, eſpecially one muſt have a care every night to looke to the mending or ſharpening of the Plough-irons, and the repairing of the Plough and Plough-geares, if any be out of order, for to deferre them till the morrow, were the loſſe of a daies worke, and an ill point of huſbandry.

Particular labours of cattells.

Now for the particular labours of Cattell, though it be already incluſively ſpoken of in that which is gone before, where I ſhew you how much a man may conveniently plow in a day with one Teame or Draught of Cattell, yet for further ſatisfaction, you ſhall underſtand, that in your cattell there are many things to be obſerved, as the kind, the number, and the ſoile they labour in, for the kind, which are Oxen, Bulls, or Horſes, the beſt for the draught, are Oxen, and the

the reasons I have shewed in my former Workes, the next are Horses, and the worst Bulls, because they are most troublesome; the number fit for the Pough, is eight, sixe, or foure; for the Cart, five or foure; and for the Waine, never under sixe, except in leading home of harvest, where loading easily, foure very good Oxen are sufficient; for the soile, if it be of the toughest and deepest earth, eight beasts can doe no more but fallow or breake up Pease-earth, no, nor fewer stirre, if the season grow hard and dry; for soyling, winter rigging, and seed furrow, sixe beasts may dispatch that labour: if the soile be mix'd and hassell, then sixe may fallow and sow Pease, and foure doe every other ordure: but if it be light and easie sand, then foure is enow in every season. For the quantity of their worke, an Oxe-plough may not doe so much as a Horse-plough, because they are not so swift, nor may be driven out of their pace, being more upt to surfeit then Horses be, so that for an Oxe-plough to do an Acre, and a Horse-plough an Acre and a rood, or an Acre and an halfe in good grounds, is worke fully sufficient.

CHAP. 22.

The applying of Husbandry to the severall Countries of this Kingdome, wherein is shewed the office and duty of the Carter or Plow-man.

IT is to be understood, that Husbandry doth vary according to the nature and climats of Countries; not one rule observed in all places, but according as the earth, the aire, the much or little heat, moisture or cold doth increase or diminish, so must the skilfull Husbandman alter his seasons,

ſons, labours and inſtruments; for in ſtiffe Clayes, as are all the fruitfull Vales of this Kingdome (of which I have named moſt part in a Chapter before) as alſo *Huntington-ſhire*, *Bedford-ſhire*, *Cambridge-ſhire*, and many other of like nature, all manner of arable workes muſt be begun betimes in the yeere, and the Ploughes and Inſtruments muſt be of large ſize and ſtrong timber, and the labour great and painfull: ſo alſo in mixt ſoiles that are good and fruitfull, as *Northampton-ſhire*, *Hartford-ſhire*, moſt part of *Kent*, *Eſſex*, *Barke-ſhire*, and Countries of like nature, all arable toiles would begin at latter ſeaſons, and the Ploughes and Inſtruments would be of middle ſize, and indifferent timbers, and the labour ſomewhat leſſe then the other: but the light ſandy grounds which have alſo a certaine naturall fruitfulneſſe in them, as in *Norfolke*, *Suffolke*, moſt part of *Lincoln-ſhire*, *Hamp-ſhire*, *Surry*, and Countries of that nature, all arable toiles would begin at the lateſt ſeaſons, and the Ploughs and inſtruments would be of the ſmalleſt and lighteſt ſize, and of the leaſt timber, and the labour of all other is eaſieſt.

Laſtly, for the barren unfruitfull earths (of which onely I have written in this Booke) as is *Devon-ſhire*, *Cornewall*, many parts of *Wales*, *Darbi-ſhire*, *Lancaſhire*, *Cheſhire*, *Yorke-ſhire*, and many other like, or worſe than they; the arable toiles would have a fit ſeaſon of the yeere, according to the temperateneſſe of the yeere, which if it happen earely, then you muſt begin your labours at later ſeaſons, and for your Plough and Inſtruments, they muſt not keepe any certaine proportion, but be framed ever according to the ground, the ſtronger and ſtiffer ground having ever the ſtrong and large Plough, with Inſtruments of like kinde, and the lighter earth a Plough

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and Inſtruments of more eaſie ſubſtance; as for the labour, it muſt be ſuch, and no other, than that which hath beene already declared in this Booke.

And hence it comes that the office and duty of every ſkilfull Plough-man, or Carter, is firſt to looke to the nature of the earth, next to the ſeaſons of the yeere, then to the cuſtomes and faſhions of the place wherein he liveth: which cuſtomes, although they be held as ſecond natures amongſt us, and that the beſt reaſons of the beſt worke-men commonly are, that thus I doe, becauſe thus they doe; yet would I wiſh no man to bind himſelfe more ſtrictly to cuſtome, than the diſcourſe of reaſon ſhall be his warrant, and as I would not have him too prejudicate in his owne opinion, ſo I would not have him too great a ſlave to other mens traditions, but ſtanding upon the ground of reaſon made good by experience, I would ever have him profit in his owne judgement. The Carters office.

Now the further office and duty of the Huſbandman, is with great care and diligence, to reſpect in what ſort of faſhion to plow his ground; for although I have in the former Chapter ſhewed how hee ſhall lay his furrowes, what depth he ſhall plow them, and how hee ſhall be able to raiſe and gaine the greateſt ſtore of mould, yet is there alſo another conſideration to be had, no leſſe profitable to the Huſbandman than any of the former, and that is, how to lay your lands beſt for your owne profit and eaſe, as alſo the eaſe of your Cattell, which ſhall draw within your draught: as thus for inſtance: If your arable land ſhall lie againſt the ſide of any ſteepe hill (as for the moſt part all barren earths doe) if then you ſhall plow ſuch land directly againſt the hill, beginning below, and ſo aſcending ſtreight upright, and ſo downe againe, and

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up again; this very labour and toiling against the hill will breed such a bitter warisomnesse to the cattell, and such a discouragement, that you shall not be able to compasse one halfe part of your labour; besides, the danger of over-heating and surfeiting of your beasts, whence will spring many mortall diseases: Therefore when you shall plow any such ground, be sure ever to plow it side-waies overthwart the hill, where your beasts may tread on the level ground, and never directly up and downe, so shall the compasse and meanure which you lay upon the ground not be so soone wash'd away from the upper part of the ground, because the furrowes no lying streight downe in an even descent, but turned crosse-wise upward against the hill, it must necessarily hold the soile within it, and not let it wash away.

Of Cattell for draught.

Againe, it is the office of every good Plow-man, to know what Cattell are meetest for his draught; as whether Oxen, or Horse, or both Oxen and Horse: wherein is to be understood, that although of all draughts whatsoever within this Kingdome, there is none so good to plow withall; both in respect of the strength, stability, indurance, and fitnesse for labour, as the Oxen are, in whom there is seldome or never any losse, because whensoever his service faileth in the draught, his flesh will be of good price in the shambles; yet notwithstanding, in this case a man must necessarily bind himselfe much to the custome of the Country, and fashion of his neighbours; for if you shall live in a place where fuell is scarce, and farre to be fetch'd, as commonly it is in all barren Countries, which, for the most part, are stony Champaines, or cold Mountaines; and your neighbours as well for the speed of their journies, as for the length,

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keepe horse draughts: In this case you must also doe the like, or else you shall want their companies in your journey, which is both discomfort and disprofit if any mischance or casualty shall happen, or being inforc'd to drive your Oxen as fast as they doe their horse, you shall not only over-heat, tire, bruise, and spoile them; but also make them utterly unfit either for feeding or labour: and therefore if your estate be meane, and that you have no more but what necessity requires, then you shall sort your Plough or Teame according to the fashion of your Country, and the use of your neighbours: but if God have blest you with plenty, then it shall not be amisse for you to have ever an Ox-draught or two to till your Land; and a Horse-draught to doe all your forraine and abroad businesses: so shall your worke at home ever goe constantly forward, and your outward necessary provisions never be wanting. Now for the mixture of Oxen and Horse together, it falleth out oftentimes, that the Plough-man must of force be provided with Cattell of both kind, as if he happen to live in a rockie Country, where the steepnesse of the hills, and narrownesse of the waies, will suffer neither Cart, Waine, nor Tumbrell to passe; in this case you shall keepe Oxen for the Plough to till the ground with, and Horses to carry pots or hookes: the first to carry forth your meanure, and the other to bring home your Hay and Corne-harvest, your fuell, and other provisions which are needfull for your family; as they do both in *Cornwall*, and all other mountainous Countries, where Carts and Waines, and such like draughts have no possible passage.

Againe, it is the office and duty of every good Plough-man to know his severall labours for every severall Moneth through the whole yeere, whereby no

day nor houre may be mis-pent, but every time and season employed according as his nature requireth: as thus for example.

January. In the Moneth of *January*, the painfull Plough-man, if he live in fertile and good soiles, as amongst rich, stiffe, simple clayes, hee shall first plow up his Pease-earth, because it must lie to take baite before it be sowne; but if hee live in fruitfull well mix'd soiles, then in this Moneth hee shall begin to fallow the field he will lay to rest the yeere following; but if he live upon hard barren earths (of which chiefly I write) then in this Moneth hee shall water his Meadowes and Pasture grounds, and he shall draine and make dry his arable grounds, especially where hee intends to sow Pease, Oats, or Barley, the seed-time following. Also he shall stub up all such rough grounds as hee intends to sow the yeere following, and shall meanure and trim up your Garden-moulds, you shall comfort with meanure, sand, or lyme, or all three mix'd together, the roots of all barren fruit trees: and also cut downe all such timber, onely there will be losse in the barke, for the time is somewhat too early for it to rise. Lastly, you may transplant all sorts of Fruit-trees, the weather being open, and the ground easie: you may rear Calves, remove Bees, and for your owne health keepe your body warme, let good diet and wholesome be your Physitian, and rather with exercise then sauce, increase your appetite.

February. In the Moneth of *February*, either set or sow all sorts of Beanes, Pease, and other Pulse, and the stiffer your ground is, the sooner begin your worke, prepare your Garden-mould, and make it easie and tender, prune and trim all sorts of Fruit-trees from mosse, cankers, and all superfluous branches; plash your hedges, and

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lay your quick-ſets cloſe and intire together; plant Roſes, Gooſeberries, and any fruit that growes upon little buſhes; graft at the latter end of this moneth upon young and tender ſtockes, but by all meanes over-lade not the ſtockes.

Laſtly, for your health, take heed of cold, forbeare meats that are ſlimy and phlegmaticke, and if need require, either purge, bathe, or bleed, as Art ſhall direct you.

In the moneth of *March*, make an end of ſowing of all ſorts of ſmall Pulſe, and begin to ſow Oats, Barley, and Rye, which is called *March*-Rye; graft all ſorts of fruit-trees, and with young Plants and Syens repleniſh your Nurcery, cover the roots of all trees that are bared, and with fat earth lay them cloſe and warme: If any tree doe grow barren, bore holes in the root, and drive hard wedges or pins of Oake-wood therein, and that will bring fruitfulneſſe: tranſplant all ſorts of Summer-flowers, and give new comfort of meanure and earth to all early outlandiſh flowers, eſpecially to the *Crown Emperiall*, *Tulippos*, *Hyacinth*, and *Narciſſus*, of all ſhapes and colours, cut downe underwood for fuell and fencing, and looke well to your Ewes, for then is the principall time of yeaning: And laſtly, bathe often, and bleed but upon extremity, purge not without good counſell, and let your diet be coole and temperate. March.

In the moneth of *April* finiſh up all your Barley-ſeed, and begin to ſow your Hempe and Flaxe: ſow your Garden-ſeeds, and plant all ſorts of herbs; finiſh grafting in the ſtocke, but begin your principall inauguration, for then the rind is moſt pliant and gentle: open your Hives, and give Bees free liberty, leave to ſuccour them with food, and let them labour for their living. April.

Now cut downe all great Oake-timber, for now the barke will rise, and be in season for the Tanner. Now scowre your ditches, and gather such meanure as you make in the streets and high-waies, into great heapes together; lay your meadowes, sleight your corne-grounds, gather away stones, repaire your high-waies, set Oziers and Willowes, and cast up the bankes and munds of all decayed fences.

Lastly, for your health, either purge, bathe or bleed, as you shall have occasion, and use all wholesome recreation, for then moderate exercise in this moneth, there is no better Physick.

May. In the moneth of *May* sow Barley upon all light sands and burning grounds, so likewise do your Hemp and Flaxe, and also all sorts of tender Garden-seeds, as are Cucumbers and Mellons, and all kind of sweet smelling herbs and flowers; Fallow your stiffe claies; Summer-stirre your mix'd earth, and foile all light and loose hot sands: prepare all barren earth for Wheat and Rye, Burne baite, Stub gorsse or Furres, and roote out Broome and Ferne: begin to fold your sheepe, leade forth meanure, and bring home fuell and fencing, weed your Winter-corne, follow your common workes, and put all sorts of Cattell to grasse, either in pasture or teather: put your Mares to the Horse, let nothing be wanting to furnish the Dairy: and now put off all your Winter-fed fat Cattell, for now they are scarcest and dearest, put young Steares and drie Kine now to feed at fresh grasse, and away with all Pease-fed sheepe, for the sweetnesse of grasse mutton will pull downe their prices.

Lastly, for your health, use drink that will coole and purge the blood, and all other such physicall precepts, as true Art shall prescribe you: But beware of Mountebanks.

tebanks and old wives tales, the latter hath no ground, and the other no truth, but apparent cozenage.

In the Moneth of *June*, carry sand, marle, lime, and meanure of what kind soever to your land; bring home your coales and other necessary fuell fetch'd farre off, sheare early fat sheepe, sow all sorts of tender herbs, cut ranke low medowes, make the first returne of your fat cattell, gather early Summer fruits, distill all sorts of Plants and Herbs whatsoever. June.

And lastly, for your health, use much exercise, thin diet, and chaste thoughts.

In the Moneth of *July*, apply your hay-harvest, for a day slack'd is many pounds lost, chiefly when the weather is unconstant, sheare all manner of fild-sheepe, Summer-stirre rich stiffe grounds, foile all mixt earths, and latter soile all loose hot sands, let herbs you would preserve, now turne to seed, cut off the stalkes of outlandish flowers, and cover the roots with new earth, so well mix'd with meanure as may be, sell all such Lambs as you feed for the Butcher, and still lead forth sand, marle, lime, and other meanure; fence up your Copses, graze your elder under-woods, and bring home all your field-Timber. July.

And lastly, for your health, abstaine from all Physicke, bleed not, but upon violent occasion, and neither meddle with Wine, Women, nor other wantonnesse.

In the Moneth of *August*, apply your Corne-harvest, sheare downe your Wheat and Rye, mowe your Barley and Oats, and make the second returne of your fat sheepe and cattell; gather all your Summer greater fruit, plums, apples, and peares, make your Summer or sweet Perry and Cider; set slips and Syens of all sorts of Gilly-flowers, and other flowers, and transplant August.

them that were set the Spring before: and at the end of this Moneth, begin to Winter-rig all fruitfull soiles whatsoever; geld your Lambs, carry meanure from your Dove-coats, and put your Swine to the early or first mast. And lastly, for your health, shun feasts and banquets, let Physicke alone, hate Wine, and only take delight in drinks that are coole and temperate.

September. In the Moneth of *September*, reape your Pease, Beanes, and all other Pulse, making a finall end of your harvest; now bestow upon your Wheate-land your principall manure, and now sow your Wheat and Rye, both in rich, and in barren climates; now put your Swine to mast of all hands, gather your Winter-fruit, and make sale of your wooll, and other Summer-commodities; now put off those stockes of Bees, you meane to sell or take for your owne use; close thatch, and dawb'd warme, all the surviving hives, and looke that no Drones, Mice, or other Vermine be in or about them, now thatch your stackes and reekes, thrash your seede-Rye and Wheate, and make an end with your Cart of all forraine journies.

Lastly, for your health in this Moneth, use Physicke, but moderately, forbeare fruits that are too pleasant or rotten, and as death shun ryot and surfeit.

October. In the Moneth of *October*, finish up your Wheat-seede, scoure ditches and Ponds, plash and lay hedges and quick-set, transplant, remove, or set all manner of fruit-trees, of what nature or quality soever; make your Winter-Cider and perry, spare your private pastures, and eate up the corne-fields and commons, and now make an end of Winter-ridging, draw furrowes to draine and keepe dry your new sowne Corne, follow hard the making of your Malt, reare all such

Calves

Calves as ſhall fall, and weane thoſe Foales from your draught-mares, which the Spring before were foaled: now ſell all ſuch ſheepe as you will not winter, give over folding, and ſeparate Lambes from the Ewes which you purpoſe to keepe for your owne ſtocke.

Laſtly, for your health, refuſe not any needfull Phyſicke at the hands of the learned Phyſitian, uſe all moderate ſports, for any thing now is good which reviveth the ſpirits.

In the moneth of *November*, you may ſow either Wheate or Rye in exceeding hot ſoiles, you may then remove all ſorts of Fruit-trees, and plant great trees, either for ſhelter or ſhadow: now cut downe all ſorts of timber, for Ploughes, Carts, Axeltrees, Naves, Harrowes, and other huſbandly offices, make now the laſt returne of your graſſe-fed Cattell; bring your Swine from the maſt, and feed them for ſlaughter, reare what Calves ſoever fall, and breake up all ſuch Hempe and Flaxe as you intend to ſpin in the Winter-ſeaſon. November.

Laſtly for your health, eate good wholeſome and ſtrong meats very well ſpiced and dreſt, free from rawneſſe, drinke ſweete Wines, and for diſgeſtion ever before Cheeſe preferre good and moderate exerciſe.

In the moneth of *December*, put your ſheepe and Swine to the Peaſe Reekes, and fat them for the ſlaughter and market; now kill your ſmall Porkes and large Bacons, lop hedges and trees, ſaw out your timber for building, and lay it to ſeaſon, and if your land be exceeding ſtiffe, and riſe up in an extraordinary furrow, then in this moneth begin to plow up that ground whereon you meane to ſow cleane Beanes December.

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onely, now cover your dainty fruit-trees all over with Canvase, and hide all your best flowers from frosts and stormes with rotten old Horse-litter; now draine all your corn-fields, and as occasion shall serve, so water and keepe moist your medowes; now become the Fowler with Peece, Nets, and all manner of Engin, for in this Moneth no Fowle is out of season: Now fish, for the Carpe, the Breame, Pyke, Tench, Barbell, Peale and Salmon. And lastly, for your health, eate meats that are hot and nourishing; drinke good wine that is neate, sprighty and lusty, keep thy body well clad, and thy house warme, forsake whatsoever is phlegmatick, and banish all care from thy heart, for nothing is now more unwholesome then a troubled spirit.

Many other observations belong unto the office of our skilfull Plough-man or Farmer; but since they may be imagined too curious, too needlesse, or too tedious, I will stay my Pen with these already rehearsed, and thinke to have written sufficiently, touching the application of grounds and office of the Plough-man.

The end of Markham's *farewell to Husbandry.*

FINIS.

BRITISH MUSEUM

Diuerse new ſorts of *Soyle not yet brought* into any publique vſe, for *manuring both of paſture* and arable ground, with ſundrie concepted practiſes *belonging therunto.*

Faithfully and familiarly ſet *downe by H. Plat of Lin-* coln's Inne Gent.

K Platt (Sir H.) [The parell house of Art &c

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